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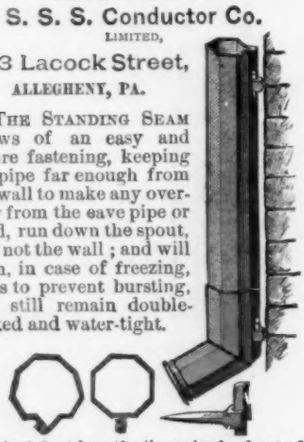

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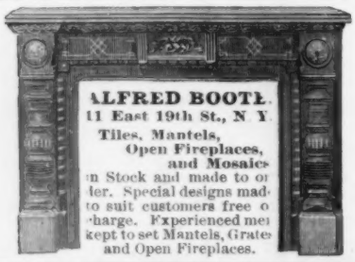

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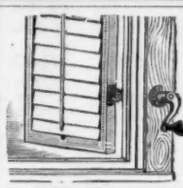

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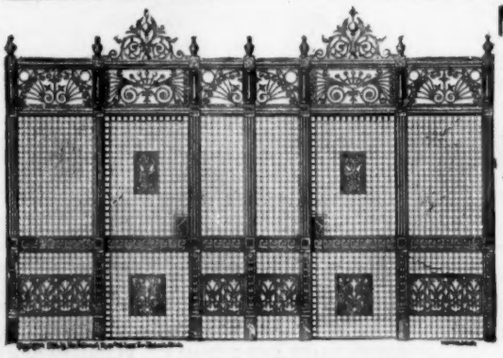

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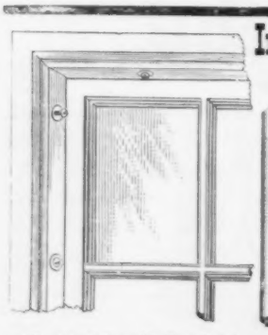

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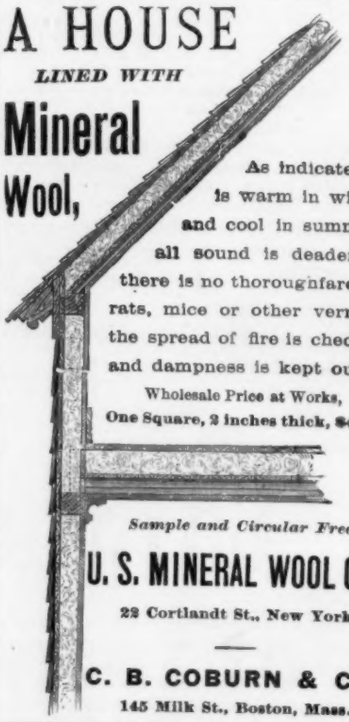

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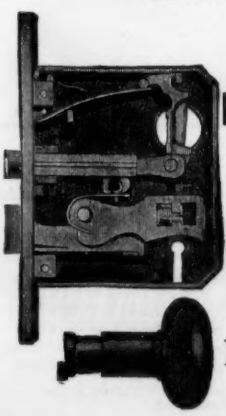

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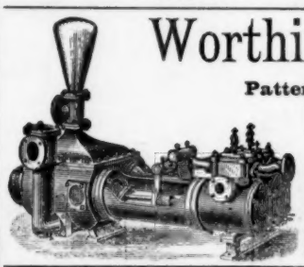

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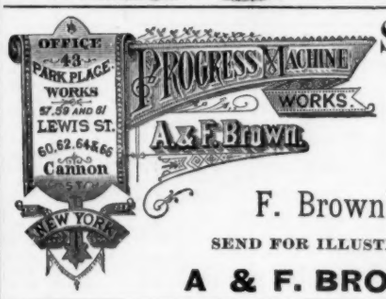

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Common: *Cargo afloat.*				
Pale	$3 00 @ $3 50	Eastern 7 00 @ 7 50	Building Brick 6 00 @ 7 00	Hard @ 8 00
Jersey	5 50 @ 6 00	Bay State Hard 9 00		Salmon @ 6 00
Long Island	@	Domestic Com. 8 00 @ 9 00	Indiana Pressd 16 00 @ 28 00	Stretchers @ 11 00
Up River	5 75 @ 6 37½	Domestic Face 19 00 @ 20 00	St. Louis Fronts @ 27 00	Pressed 20 00 @ 23 00
Haverstraw Bay	6 25 @ 6 50	Philadelphia 40 00 @ 45 00	———	End Headers, all colors @ 65 00
" 1st	6 50 @ 6 75	Phila. mould 50 00 @ 80 00	———	Edge & End all colors @ 85 00
Hollow	@ 13 00		22 00 @ 29 00	
Fronts:			65 00 @ 350 00	
Croton, Brown	12 00 @ 13 00		@ 50 00	
" dark	13 00 @ 14 00	Glens Falls 25 00 @ 26 00	———	
" red	13 00 @ 14 00	Glens Falls Mould. 30 00 @ 35 00	@ 45 00	
Chicago pressed			38 00 @	
Chicago Moulded			25 00 @	
Baltimore	37 00 @ 41 00		60 00 @ 100 00	
Glens Falls—white	30 00 @ 35 00		30 @	
Philadelphia	24 00 @ 25 00		35 @	
Trenton	24 00 @ 25 00		55 00 @ 65 00	
Milwaukee				
Moulded:				
Clark's Glens Falls—Red	25 00 @ 27 00			
" —White	30 00 @ 35 00	35 00 @ 40 00		
White " Mold	45 00 @ 60 60	45 00 @ 60 00		
Enamelled: *Imp.*				
Enamelled (edge)	85 00 @ 100 00	@	@ 100 00	Dom. @ 65
Enamelled (edge and end)	90 00 @ 115 00	@	@ 120 00	@ 85
CEMENT, LIME, etc.—(₱ *cask.*)				
Rosendale Cement	95 @ 1 00	@ 1 40	*Not Sold.*	1 50 @ 1 75
Utica, Akron, Buffalo, Louisville, Milwaukee	*Not sold.*	*Not sold.*	1 00 @ 1 25	*Not sold.*
Portland, English (Gibbs)	2 50 @ 3 10	@ 3 20	3 00 @ 3 25	@ 3 50
" " (K. B. & S.)	2 75 @ 3 10		3 25 @ 3 50	@ 3 25
" " (Burham)	2 50 @ 2 80		3 15 @ 3 35	@ 3 00
" " (White's)	2 85 @ 3 00			
" German (Alsen)	2 50 @ 3 00	3 00 @ 3 50	3 15 @ 3 35	@ 25
" " (Fewer)	2 45 @ 2 70	3 15 @ 3 35	3 15 @ 3 35	
" " (Vorwohler)	2 50 @ 3 25		3 00 @ 3 25	
" " (Dyckerhoff)	2 75 @ 3 15	3 00 @ 3 50	3 25 @ 3 50	3 00 @ 3 2
" " (Lagerdofer)	@ 2 70	*Not sold.*	*Not sold.*	*Not sold.*
" " (Hanover)	2 50 @ 3 00		3 15 @ 3 35	2 50 @ 3 00
" French (Lafarge)	3 50 @ 4 50	*Not sold.*	3 75 @ 4 25	4 50 @
" American (Saylor's)	2 15 @ 2 30	2 15 @ 2 50	2 75 @ 3 00	2 50 @ 3 00
Selenitic		1 65	*Not sold.*	
Roman	2 75 @ 3 00	@ 3 20	2 75 @ 3 25	3 50 @ 3 75
Keene's coarse	5 00 @ 6 50	@ 7 50	8 00 @ 9 00	6 50 @ 7 00
" superfine	8 75 @ 11 00	@ 11 50	12 00 @ 13 00	11 50 @ 12 00
Lime:				
Lime of Teil	@ 5 00		*Not sold.*	
Hydraulic Lime	@ 1 45	@ 145		
Chicago Lime in bulk			65 @ 75	White Mash 1 25 @ 150
Wisconsin "			75 @ 85	1 00 @ 1 00
Rockland and Rockport, (Com.)	@ 1 00	@ 1 15	*Not sold.*	
Rockland and Rockport, finish	@ 1 20	@ 1 20	*Not sold.*	
State, com. cargo rates (nom.)	@ 90	*Not sold.*	*Not sold.*	*Not sold.*
State, finishing "	@ 1 10	*Not sold.*	*Not sold.*	*Not sold.*
Plaster of Paris (calcined.)	@ 1 25	1 65 @ 1 90	@ 1 75	2 00 @ 2 25
" (casting)	@ 1 35	@ 2 25	@ 1 75	2 25 @ 2 50
Hair (Cattle) ₱ *bush.*	21 @ 25	@ 30	20 @ 25	20 @ 25
" (Goat)	30 @ 35	@ 30	35 @ 40	28 @ 33
Sand, ₱ *load*	1 00 @ 1 25	@ 1 50	100 @ 1 25	@ 1 50
STONE. (₱ *cubic foot, rough.*)				
Granite: (*Maine*)		@ 60		75 @ 2 00
Limestone:				
Bedford	@ 1 00	95 @ 1 00	50 @	3 75 @
Joliet	@		35 @ 55	
Lemont	@		35 @ 60	
Serpentine			80 @ 90	75 @ 1 25

(*Continued on page* v)

10

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Foundation:	(*Wholesale Prices.*)	(*Prices to Builders and Contractors.*)		
Dimension	@	5 00 ℔ ton	20 @ 28	30 @ 5 00
Block	@	4 60 ℔ perch	8 50 ℔ cord.	50 @ 6 00
Rubble	@	1 25 @ 1 50	8 50 @	
Bluestone: (℔ *sq. ft.*)				
Sidewalk	30 @ 5 00	40 @ 1 75	75 @ 1 00	70 @ 90
Planed	50 @ 6 00	75	50 @ 1 00	1 10 @ 1 25
Sandstone,				
Longmeadow		75 @ 85		
Kibbe		85 @ 95		
Brown (Connecticut)	1 00 @	1 25 @ 1 45	1 50 ℔ cub.ft.	1 35 @ 2 00
Amherst } Ohio	90 @ 95	90 @ 1 00	55 @ 65	
Berea } Ohio	75 @ 1 00	80 @ 90	45 @ 55	90 @ 1 10
Berlin } Ohio	75 @ 1 00	80 @ 90	55 @ 65	
Belleville	80 @ 1 25	1 25 @ 1 35	"	
New Brunswick and Nova Scotia	@ 1 00	75 @ 1 00	"	
Caen	@	@ 2 00	"	
Marble (℔ *cu. ft.*)				
Lee, Mass.	@	1 75 @ 2 50	*Not sold.*	2 00 @ 2 50
Rutland, white	@	@ 3 00	3 50 @ 6 00	2 25 @ 2 50
Sutherland Falls	1 25 @ 1 75	@ 2 00	3 50 @ 6 00	2 50 @ 4 00
Glens Falls, black	@	2 00 @ 3 00	*Not sold.*	4 00 @ 4 50
Italian, blue-veined	@	50 @ 60	@ 4 40	— @ —
" Sienna	@	3 00 @ 3 50	*Not sold.*	3 25 @ 6 50
Tennessee, red	@	1 25 @ 2 50	@ 4 00	2 00 @ 3 00
" Knoxville	@	85 @ 90	@ 4 00	@ 1 50
Pennsylvania, blue	@		*Not sold.*	2 23 @ 2 50
Vermont, white	@	1 50 @ 2 00	3 50 @ 6 00	
Slate: Roofing (℔ *square*)	7 @ 8 00	4 50 @ 7 00	6 25 @ 8 10	6 25 @ 7 00
" green	" unfading 5 75	@ 5 75		
" purple	7 00 @ 8 50	5 50 @ 6 50	@ 8 60	@ 7 00
" red	@ 15 00	13 00 @ 14 00	— @ 16 00	@ 12 00
" black, Lehigh	— @ —	Brownville, Me.	7 20 @ 7 60	@ 4 00
" " Chapmans	— @ —	6 50 @ 9 00	7 30 @ 8 00	@ 4 50
" Unfading Black, Monson, Me.	5 50 @ 8 00	5 50 @ 8 00	6 00 @ 8 50	5 50 @ 8 00
Tiles, Am. ℔ M.	@		*Not sold.*	@ 15 00
N. Peach Bottom, warranted unfading				@ 3 85
LUMBER.—℔ M.				
Boards: (*Ordinary dimensions.*)				
Pine, 1st quality, clear	65 00 @ 75 00	50 00 @ 60 00	44 00 @ 46 00	65 00 @ 75 00
" 2d quality	55 00 @ 60 00	42 00 @ 48 00	40 00 @ 44 00	55 00 @ 60 50
" 3d quality	18 00 @ 22 00	35 00 @ 40 00	37 00 @ 42 00	18 00 @ 22 00
Spruce	@ 25 00	11 00 @ 14 00	*Not sold.*	@ 22 50
Hemlock	ea. 17 @ 18	11 00 @ 12 50	@ 10 00	12 50 @ 15 00
Yellow pine	20 @ 40	30 00 @ 38 00	@ 28 00	17 00 @ 20 00
Cypress	@	32 00 @ 40 00	@	40 00 @ 55 00
Clapboards:				
Pine	@	33 00 @ 55 00	9 00 @ 20 50	—@—
Spruce	@	23 00 @ 35 00	*Not sold.*	—@—
Framing Timber:				
Pine			10 50 @ 14 50	25 00 @ 35 00
Spruce	13 50 @ 16 00	13 50 @ 15 00	*Not sold.*	18 50 @ 20 00
Hemlock	12 00 @ 15 00	@	10 00 @ 13 00	12 00 @ 13 00
Yellow pine	18 00 @ 25 00	23 00 @ 26 00		25 00 @ 30 00
Laths:				
Pine	@	2 25 @ 2 35	1 75 @	—@—
Spruce	@ 2 15	2 00 @ 2 25	*Not sold.*	2 35 @ 2 40
Shingles:				
Pine, shaved ℔ M.	5 00 @ 6 00	@	*Not sold.*	
Pine, sawed "	4 00 @ 5 00	@ 4 50	1 85 @ 2 45	
Spruce, sawed "	1 50 @ 2 00	@ 1 50	*Not sold.*	
Redwood ℔ 125	1 40 @ 1 60	3 75 @ 4 50	5 50 @ 8 00	30" $10 @ 28
Cedar, split ℔ M.	@	@	*Not sold.*	24" 8 @ 21
Cedar, sawed "	@	2 00 @ 4 00	@ 2 00	20" 5 50 @ 14
Cypress. Split...7 x 24. "	18 00 @ 20 00	5 50 @ 6 00	4 00 @ 4 50	13 00 @ 20 00
Miscellaneous:				
Piles ℔ ft.	4½ @ 5½	Piles 6c. ℔ ft.	*Not sold*	
Fence pickets, Spruce	8 00 @ 10 00	10 00 @ 18 00	Pine, 8 @ 1	12 00 @ 14 00
Cedar posts, 9 ft. (sq. posts.)	@	25 @ 35	9 00 @ 21 00	70 @ 1 25
Chestnut "	@	25 @ 35	*Not sold.*	28 @ 36
Finishing Woods: ℔ M. (*First Quat. Kiln-dried.*)				
Ash [	@ 55 00	38 00 @ 48 00	35 00 @ 40 00	45 00 @ 50 00
Cherry	80 00 @ 120 00	60 00 @ 90 00	75 00 @ 85 00	65 00 @ 90 00
Chestnut	@ 55 00	38 00 @ 50 00	45 00 @ 50 00	60 00 @ 80 00
Butternut	40 00 @ 60 00	60 00 @ 70 00	50 00 @ 60 00	70 00 @ 85 00
Mahogany, Baywood	@ 180 00	150 00 @ 160 00	150 00 @ 180 00	120 00 @ 150
" St. Domingo	@ 350 00	120 00 @ 350 00	250 00 @ 300 00	
Maple	45 00 @ 50 00	45 00 @ 65 00	30 00 @ 35 00	30 00 @ 50 00
Oak, red	@ 70 00	@ 50 00	35 00 @ 40 00	35 00 @ 45 00
" white	@ 70 00	@ 55 00	35 00 @ 40 00	55 00 @ 65 00
" quartered	@ 90 00	65 00 @ 70 00	45 00 @ 50 00	70 00 @ 80 00
Sycamore quartered		50 00 @ 65 00	45 00 @ 50 00	70
Pine, clear	65 00 @ 70 00	30 00 @ 65 00	45 00 @ 50 00	65 00 @ 90 00
Redwood	60 00 @ 70 00	60 00 @ 70 00	56 00 @ 65 00	100 00 @
Rosewood ℔ lb	@ 6		@ 7	
Walnut, black	125 00 @ 150 00	85 00 @ 120 00	80 00 @ 100 00	160 00 @ 200 00
Whitewood	45 00 @ 50 00	38 00 @ 45 00	30 00 @ 35 00	20 00 @ 30 00
Yellow pine ℔ M.	@ 45 00	40 00 @ 45 00	30 00 @ 35 00	30 00 @ 35 00
Gumwood, best red			30 00 @ 35 00	
PAINTS. (*In oil,* ℔ *lb.*)				
White lead, Am.	@ 6½	@ 6½	@ 6½	5 @ 6½
" Zinc, "	5 @ 8	@ 8	7 @ 11	4 @ 6
Red lead, Am.,	6 @ 6½	6 @ 6½	@ 6½	
" Venetian	6 @ 10	7 @ 12	1½ @ 2½	6 @ 8
" Vermilion	65 @ 70	55 @ 60 dry	55 @ 60	Am. 14 @ 22
Red Indian, Eng.	12 @ 20	12 @ 20	12 @ 20	12 @ 18
Yellow Ochre	6 @ 15	7 @ 12	3 @ 15	7 @ 9
" Chrome	12 @ 20	18 @ 25	12 @ 25	12 @ 25
Green (chrome)	8 @ 13	8 @ 20	8 @ 20	9 @ 15
Green, Paris,	25 @ 40	25 @ 40	16 @ 35	18 @ 22
Black, lamp,	15 @ 25	15 @ 25	8 @ 30	8 @ 12
Blue, ultramarine	12 @ 18	18 @ 30	10 @ 35	11 @ 35
Oil, linseed, (raw) (℔ *gal.*)	45 @ 47	48 @ 53	46 @ 48	52 @ 55
" " boiled (℔ *gal.*)	47 @ 49	51 @ 56	49 @ 51	57 @ 59
Turpentine (℔ *gal.*)	37 @ 39	43 @ 50	41 @ 43	45
Varnish, coach (℔ *gal.*)	@	1 50 @ 6 00	1 25 @ 2 00	1 75 @ 5 25
Shellac (℔ *gal.*)	@	2 50 @ 3 00	3 25 @ 4 00	1 10 @ 1 75
Putty	2 @ 3	2 @ 4	02 @ 03	2 @ 2½
Whiting } ℔ *cwt.*	60 @ 65	1 @ 1½	1 @ 2	1 @ 1½
Paris white, (Eng.,) } ℔ *cwt.*	2 @ 3	2 @ 3	2 @ 2½	1½ @ 1½
Litharge, Am.	5½ @ 5½	6½ @ 7	6½ @ 10	6½ @ 7½
Sienna (burnt)	12 @ 17½	14 @ 20	4 @ 16	9 @ 14
Umber, "	11 @ 16½	14 @ 20	@ 10	9 @ 14

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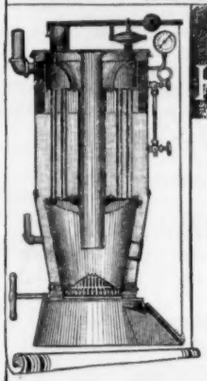

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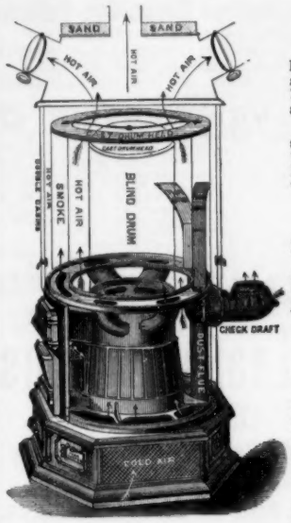

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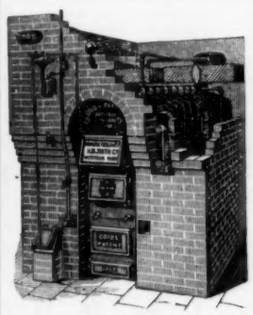

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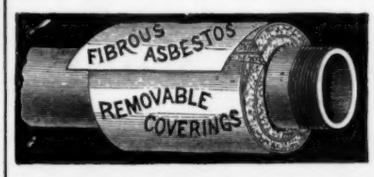

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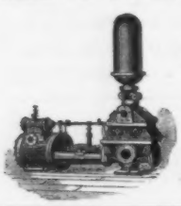

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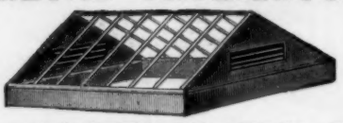

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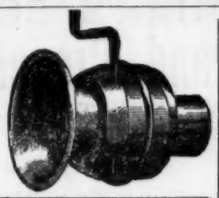

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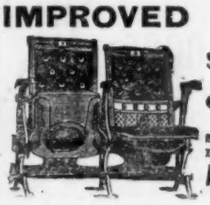

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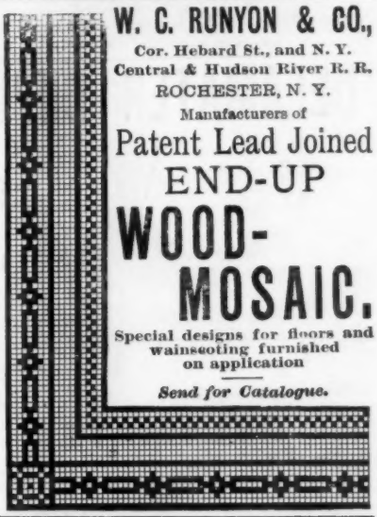

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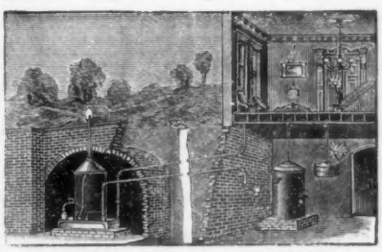

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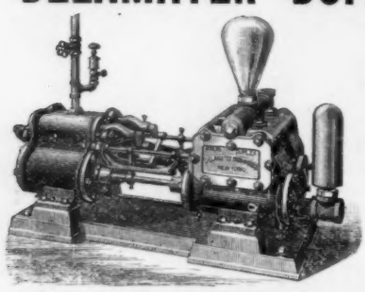

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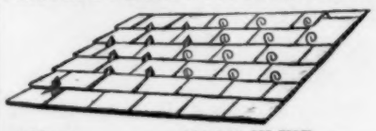

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THE death of General Grant has been followed by a discussion upon the subject of the proper disposition of his remains, which has a certain interest for architects. No particular town seems to have an unquestioned claim upon the great general, but it is understood that within the last few weeks of his life he had expressed a wish that his body might rest in the beautiful grounds of the Soldiers' Home at Washington, near the scene of his greatest efforts and his happiest successes; and, in case there should be any objection to this, the officers in charge of the West Point Military Academy had requested that the Academy enclosure might be honored by the tomb of its most illustrious pupil; but both these modest suggestions were summarily swept aside by the enterprise of the great city of New York, which immediately appointed a huge committee of its most eminent beer-sellers, brokers, politicians and railroad-men to "take charge of" a "memorial" of some unexplained sort, and telegraphed the most extravagant offers of a burial-place in any or all the city parks. It was hardly possible to decline, or even to evade, such an overwhelming invitation, and Colonel Frederick Grant, to whom it was left only to choose a spot among the different parks, selected the upper end of the Mall in the Central Park, just at its junction with the Terrace. For the site of an imposing *monument*, such as the people of New York seemed determined to erect, this was an excellent choice; the centre of the Terrace, which is designed as the focus of the artistic treatment of the Park, being, in the eyes of New Yorkers, the most august spot in the New World, but it does not seem to have suited the ideas of many people, particularly of His Honor the Mayor, who held a conference with the representatives of the family, the result of which was a change in their opinions, and the final selection of a place in the Riverside Park for the interment of the deceased soldier. This decision seems to have been received by his Honor with singular joy, and the park, which is now a neglected and remote strip of unimproved land, adjoining the Hudson River Railroad tracks, along the western edge of the upper part of the island is to be immediately put in order for the funeral ceremonies. Beyond the close proximity of a large iron foundry to the site selected for the temporary tomb, there is no particular objection to the Riverside Park as a resting-place for the bodies of weary mortals, who, as the Mayor says, do not like to feel themselves "lying remote from Nature," and who are afraid that "in the heart of a great, busy city, in the rush and hurry of the life of which death and its sacredness may be forgotten, the remains of even the great dead may be passed in thoughtlessness." But to stow away a costly monument, to the most distinguished person of the age, in an uncultivated and uninhabitable strip of land in the rear of the present metropolis, for fear that some one may pass it by "in thoughtlessness," seems to us to be carrying æsthetic sensitiveness too far. A large part of the park slopes so steeply to the river as to be nearly invisible from the Riverside Drive which borders it, besides being almost inaccessible, as well as impassible for anything except goats, and those persons who desire to approach the monument through the park from the lower part of the city will have to ascend or descend in various singular ways before they reach it. This circumstance may keep away "thoughtless passers-by," but it is also very likely to give inconvenience to more worthy persons, and we can see no prospect that any one will be benefitted by the new choice of ground except the owners of the cheap and neglected lots fronting the Park, who will probably have reason to be grateful to the deceased general for the advertisement which their property will derive from the proximity of his remains. We sincerely regret that it has been thought best to neglect the obvious claims of the Soldiers' Home at Washington.

WHILE the major part of the nation professes to be overcome with grief at the death of General Grant it may not be unjust to surmise that there are certain forehanded designers who, having the inevitable result clearly in mind, have spent a portion of the last few months in preparing to meet the demand which is already declaring itself for a monument worthy of his memory. Experience has shown that the designs which are brought forward soon after the death of a great man savor too much of the ready-made art of the cemetery stone-yard, and it seems to us that we may do something to preserve our cities and our art from the desecration of a crop of Grant memorials similar in general demerit to the average of the "soldiers' monuments" which were erected soon after the war in so many towns and villages. Apart from the national memorial which we believe will be promptly provided — the history of the Washington Monument having been so recently rehearsed should prevent the flagging of the energies of those to whom the matter may be entrusted — it is likely that there will be many other memorials undertaken by large cities and towns, less costly ones, but perhaps for that very reason more meritorious. It would probably be a great service to local monument-committees if their deliberations could be enlightened as to what might be accomplished in monumental art by other than local talent or by those pushing outsiders who are ever on the lookout for a job. We trust that there are amongst our readers many who will look on this occasion as we do, as offering a signal opportunity of accomplishing something in behalf of monumental art in America, and a way of giving pause to the misdirected enthusiasm of monument-committees by affording a means of displaying to them that there are so many ways of treating such a problem that it would be most unwise to hastily adopt the first design that might be laid before them.

WHEREFORE we will invite our readers to lay aside their prejudices against competitions; forget that the ideas they evolve may be pilfered from them, so that they may lose both glory and profit; disregard for the moment that a more legitimate and authorized competition will probably soon be announced; overlook the fact that the reward we may be able to offer is wholly incommensurate with the task, and stimulated only by a desire to indirectly prevent the erection of an unknown number of monumental burlesques, and to show the world what the American architect can accomplish when such a theme is placed in his hands, we ask the profession at large to contribute preliminary sketches for: "A monument to General Grant, to be erected by a large city at a cost of not more than $100,000." This general proposition, we think, will be enough to set pencils at work feeling round the subject, and will prepare the way for a more detailed programme which we will publish next week.

WE have received extracts from the Denver papers, which indicate that twenty-one sets of drawings were submitted in competition for the State Capitol of Colorado. Six of these are said to have been sent in by local architects, and the rest by persons outside of the State. As no description of them is given beyond a transcript of the mottoes on them, we can make no comments on the plans further than to say that the author of one of them labels his work "*Labor Amoris*," so we suppose that he will be quite contented if he does not get any pay for it. The drawings have been insured for twenty thousand dollars, and it is estimated that the work on them has cost thirty thousand, so that this seems to represent pretty fairly the contribution which the architectural profession has made for the purpose of giving the Capitol Commissioners the privilege of choosing from among a score of plans without paying for them. It is true that thirty-three hundred dollars are to be

divided among the authors of the best three plans, but the architects who made the others will have to console themselves with the reflection that their time and skill have been thrown away, for the amusement of those who would very probably have been willing and anxious to pay a good price for it if they knew that they could not have it otherwise. Whether the Capitol Commissioners will secure a great bargain in the plans they select, remains to be seen. If they are quite ready, like some other Capitol Commissioners of whom we recently heard, to order and pay for extra work from time to time as their building progresses, "to strengthen walls found too light to bear the superstructure," or to "excavate for new boiler-rooms, those built according to the plans having been found inadequate," or to patch and bolster in other ways as they go along, no doubt a cheap plan by a cheap architect, will suit them and their constituents as well as any; but if they wish to procure for the State of Colorado a public building which shall be thoroughly, carefully and beautifully designed, inside and out, and so executed that it will continue for generations to reflect more and more honor upon the skill and science of the author, they must find a man who is capable of doing such work for them, and must pay him what his time and skill are worth. It would be hard to say which is the greatest folly, to think that there is economy in confiding the construction of a great public building to amateurs and cheap experts, or to imagine that first-class architectural service can be had, by any sort of dodging or bargaining, at less than the regular price. We are perfectly ready to concede that even a cheap competition may bring to light an architect of brilliant genius which had previously remained hidden; but to persuade, delude, force or frighten this brilliant person into devoting, for the wages of a day-laborer, as much time and skill to the main part of his work as his professional friends give for pay which secures to them and their families a comfortable living so long as they are engaged on important commissions, is beyond human power, as those who attempt it usually find to their cost.

THE Associated Factory Mutual Fire Insurance Companies have just issued one of their occasional reports, or circulars in which, among other things, they give copies of the admirable regulations of the Pennsylvania Railroad Company in regard to disinfection. It is not very evident why mutual insurance companies should trouble themselves to disseminate rules for preventing the spread of cholera, but, considering the influence that mill agents are in a position to exercise upon a particularly careless and dirty class of people, the committee which prepared the report deserves credit for the thoughtful public spirit which suggested the incorporation of such useful matter in a paper which the agents of all mills connected with the companies will be sure to read. According to the theory of the Pennsylvania Railroad rules, "far more than half" of disinfection is simply cleanliness, and consists in collecting and burning at short intervals all rubbish, garbage, or decaying animal or vegetable matter. If this is done with scrupulous care, and no water used for drinking which can, by any possibility, have been contaminated by the drainage from cesspools, sewers, vaults, stables or garbage, there will be little use for disinfectants, except for the purpose of preventing persons who bring disease with them into a clean and healthy community from infecting others. To guard against these cases of imported disease, the Pennsylvania Railroad Company has had large quantities of disinfecting fluid prepared, containing two and three-quarters pounds of chloride of zinc, with one and three-quarters ounces of chloride of copper, dissolved in a gallon of water. This standard solution is sent from the Altoona shops, on requisition, to any part of the line, and is used, according to printed directions pasted on the bottles, for washing out the urinals and water-closets of passenger cars, being mixed for this purpose with about sixteen times its volume of water; and, mixed with eighty parts of water, for washing all portions of passenger cars. The same liquid, mixed with water, is used for disinfecting the discharges of sick persons, and a towel, saturated with it, is recommended for deodorizing contaminated places. Where it is not convenient to procure this solution, which costs only a few cents a gallon, the railroad authorities advise the use of battery residues from telegraph stations, mixed with common salt in the proportion of a pound-and-a-half of salt to each gallon of residues, the liquid so obtained to be diluted with water for various purposes in the same proportions as the standard solution. Where iron stains are not objectionable, copperas, or sulphate of iron, is recommended as one of the best common disinfectants, and a solution of two pounds in a gallon of water may be thrown into vaults, cesspools, sinks and sewers, and upon moist, decaying garbage, with excellent effect. In cases where it can be economically used, ice is also spoken of as an excellent disinfectant. Decomposition takes place very slowly in a liquid cooled by ice, and for this reason it is directed that a lump of ice shall be carried in the urinal of every passenger car on the Pennsylvania Railroad while the car is in service.

ANOTHER architect in England has had to sue his client to get his poor pay with the usual result. In this case, which is known as Taylor and Locke *vs.* Greene and Son, the plaintiffs, composing a firm of architects brought suit to recover twenty-two hundred and fifty dollars, the balance due them for services in preparing plans and drawings, with other professional work, for the rebuilding of a certain business structure. The defendants in resisting this claim, brought forward the usual tale of woe, to the effect that among other things, the architects had not sufficiently considered or warned them about the claims of neighboring owners in regard to light and air, and that through this neglect disputes had arisen between the defendants and their neighbors, involving the former in expenses amounting to eighteen thousand dollars, which, as they claimed, the architects ought to pay. The reply of the architects to this was simply that they had been engaged to do the work of architects, under the instructions of the defendants, and that they had done this, and nothing more. Although the trial lasted seven days, and a great deal of evidence was brought forward, the jury seems to have retained through the whole the view of the matter that juries usually take, and promptly returned a verdict for the plaintiffs for nineteen hundred dollars and costs. So far as we can judge from the brief but clear account which we find in the *Builder*, this seems to have been one of those cases where a man, having engaged a young or over-amiable architect to do a certain piece of professional work, imagines that he has a claim upon his time and services to any extent, and for any purpose, and keeps him trotting about, investigating, negotiating and inquiring in regard to matters which do not come at all within an architect's province, however convenient it may be for the architect's employer to have him busy himself about them without charge; and after getting all the work out of him that he can, avails himself of all the disappointments that he may have experienced in the results of the errands which he has persuaded the architect to do for him to cut down the pay due him for his legitimate services. There are plenty of such men in the world, and plenty of architects who suffer from them, but the number of the latter would be smaller, if the younger members of the profession fully understood how little respect a court accords to any pretext whatever for depriving a man of any part of the money which he has earned by reasonably skilful and faithful services in his own vocation.

THE *Builder* gives a brief description of the Krupp cannon foundry at Essen, in Prussia, which will surprise even those who know something of the extent to which the concentration of capital in the hands of individuals is often carried abroad. The whole number of workmen now employed by Herr Krupp exceeds twenty thousand. Many of these are attached to the foreign iron mines or smelting-works belonging to the establishment, but something like one-half live with their families in Herr Krupp's houses at Essen. In addition to the great cannon foundry at home, the works include five hundred and forty-seven different iron mines in various parts of Germany, besides several in the Bilbao district in Spain, the product of which is converted into iron in eleven smelting furnaces, and fifteen hundred and forty-two puddling and reheating furnaces. Four hundred and thirty-nine boilers, supplying four hundred and fifty steam-engines, furnish one hundred and eighty-five thousand horse-power for moving the machinery of the establishment, and the product of three coal mines is consumed at the Essen works alone. For transporting materials and other goods about the works thirty-seven miles of railway are laid, with an equipment of eighty-eight locomotives, and eight hundred and ninety-three freight-cars; and thirty-five private telegraph stations, with forty miles of wire, serve to transmit directions between the various portions of the works.

AN ITALIAN WORKINGMEN'S COLONY.

Sig. Rossi's Memorial to his Workmen, Schio.

NO one who has travelled only in the south of Italy, nothing would seem more hopeless than to expect from the people any noteworthy attempts to solve the important questions of the relations between laborer and employer, or to provide suitable homes for the working classes. But that in these directions the nation as a whole is rapidly waking up to its grand possibilities, is abundantly proved by the number of instances found throughout the north, of careful, intelligent work of a nature and quality such as, with us, the Italians seldom receive credit for; and there are some parts of the land which afford to the American student subjects for study quite aside from those of a purely artistic character. There have been large proprietors in Italy ever since the world began, almost, but only lately have any systematic attempts been made to improve the condition of the working classes, especially the mill operatives, the class which always requires the most serious attention, and in many countries is apt to be the most neglected. Of course such attempts have the greatest success when made by the mill owners, and what has been accomplished through the instrumentality of Signor Alessandro Rossi, at Schio, is, it is hoped, an example which may speedily be followed in other parts of the country. There is abundant field for such work all through Italy.

Schio can almost be called, on a small scale, the Manchester of Italy. It is a manufacturing city of some ten thousand inhabitants, located among the foot-hills of the Alps, about twenty miles north of Vicenza, near the boundary between Austria and Italy. The industries of the place are confined chiefly to wool manufactures. The largest factory was established in 1817, by Francesco Rossi, to whom succeeded, in 1845, his son, the present owner, the Senator Alessandro Rossi. In 1872 the latter founded a stock company, which included in its operations the original factory and seven others in the immediate vicinity. The works now employ about five thousand hands, the greater portion of whom are inhabitants of Schio. Signor Rossi appears to have been strongly imbued with a sense of the necessity for helping his workmen towards a better condition of living than they could obtain for themselves; for when the company was organized, a clause of its charter provided that five per cent of the net profits should annually be devoted directly to the wants of the operatives, the disposition of this amount to be at the discretion of the directors. This was not to be considered as a charity, Signor Rossi believing that the workmen who helped him earn his money were themselves entitled to a share in the profits beyond their mere wages. In this way, during the eleven years ending with 1883, the workmen's shares have amounted to about five hundred thousand francs, besides which the company has given a direct endowment of five hundred thousand francs for the support of the workmen's institutions founded by it, and Signor Rossi from time to time has added large gifts in his own name, so that up to the present time not far from one million five hundred thousand francs have been expended in the building and maintenance of the houses, schools, dwellings, etc., with which the hands of the *Lanificio* Rossi are now so well provided. Hence it will be seen that neither money nor good will were lacking to make Schio a model manufacturing town.

The workmen's quarter occupies an area of about forty acres, in the pleasantest and most healthy portion of the town, and is immediately adjacent to the larger factory. The streets are wide, well paved, and planted with shade trees, and the houses have a clean, attractive appearance, which must add considerably to the satisfaction of the inhabitants. Signor Rossi is a thorough democrat, as he has proved by building in the centre of the quarter a house which is occupied by his son, and in which the Queen of Italy was entertained in 1876. The quarter is kept in thoroughly good order, and with its magnificent surroundings of mountain scenery is certainly a model settlement so far as location and appearance can go. At the end of the principal street is the *Asilo di Maternità*, or day-nursery, a large, comfortable-looking building, one story in height, with a wide, covered porch across the front, and an inviting-looking garden all around. The babies are received here as young as fifteen days. The mothers bring them in the morning, returning two or three times during the day to nurse them, and take them home at night. The children are taken care of until they are three years old; and a healthier, happier-looking set of babies than the one hundred and twenty who are daily cared for it would be hard to find. A sister of charity has charge of the institution. While at the nursery the babies are neatly clad in little red and blue frocks, and given baths, or allowed to sleep in the cool, clean dormitory, or trotted about in the shady garden, and given an abundance of good, wholesome food, when they are able to receive it; and the result of all this care is a rising generation of young wool-workers which must gratify the heart of Signor Rossi. Between the ages of three and seven years, the children of the operatives are received into an *Asilo Infantile*. The building is large, covering an area of twelve hundred square metres, and is two stories high, with large, well-arranged class-rooms, and an assembly-hall capable of seating all of the four hundred and sixty children who are daily received here. It has also a large dining-room, where at noon the little ones are given a good, substantial meal, such as, doubtless, some of their parents never have more than once a week. The *Asilo* further has connected with it a bath, a gymnasium, and a small medical dispensary, all entirely free to the children of the operatives. This school building and its appointments would be a credit to any city. Nearly half a million francs have been spent on this one institution, and for its purpose nothing better could be desired. The teaching is largely on the Froebel system, besides which the girls are instructed in needlework and drawing, with results which are quite surprising, considering the age of the pupils and the class to which they belong. The health of the children is carefully looked after, and that the working classes have been physically benefited by this systematic care of the young lives is abundantly proved by the increase in the proportion of strong, robust young men during the fifteen years that the schools have been in operation.

Asilo Infantile, Schio.

Between the ages of seven and twelve years, the children of the workmen are received in an elementary school, where they obtain a good common-school education, sufficiently extended for their needs as future factory hands; while of course, if desired, the children can, after leaving here, go to the Commune school supported by the city. The running expenses of the *Asilo Infantile* and the elementary school together amount to about forty-six thousand francs per year.

Any one visiting these various institutions cannot but be forcibly impressed with the clean, healthy and contented appearance of the children, and also with their good behavior, for they are apparently taught manners as well. When a stranger enters the room they all rise and remain standing until he departs, saluting him with a cheery "*favorisca.*" Indeed our Boston school children might with profit learn a few lessons from these little embryo operatives of Schio. At the time of our visit to the *Asilo Infantile*, in one of the rooms a rosy-cheeked little girl, not over five years old, stepped up to the blackboard at the teacher's request, and courtesying prettily to us, wrote out in a big, round hand the word *America;* and in the embroidery class some fine needlework was shown, which would have done credit to a child ten years older than the little baby who presented it to us. The education given, while not very extensive, is quite thorough, and we found that the officers of the mill were glad to put their children at school with the children of the operatives.

The *Lanificio* Rossi receives workers as early as the age of twelve years, though no children are allowed to work unless they give evidence of possessing a strong, robust constitution. For the benefit of those who are obliged to work but wish to educate themselves further, a night school has been established, which is largely attended. It is worthy of note that since 1871 the proportion of illiteracy in the commune of Schio has decreased by more than fifteen per cent.

Signor Rossi has further done a great deal towards putting his operatives in the way of becoming owners of comfortable, well-built homes. He has erected thus far some sixty-seven houses, representing a total value of three hundred and seventy-four thousand seventy-six francs, which have been sold to the workmen on terms extending through ten years or more. Signor Rossi lets out the money at four per cent, and affords every facility to the workmen to meet the payments. A clear title to the property is not given, Signor Rossi, in the name of the company, retaining a supervisory authority over all, in order to prevent either unlawful speculation in the houses, to the detriment of the class for whose benefit they are built, or neglect of the premises by the owners themselves. Four hundred and eighty of the operatives are at present owners or part owners of these houses. Several different types of dwellings have been erected, and repeated experiments made to discover which is best suited to the wants of the workmen, with a final choice in favor of houses in rows, separated only by party-walls, with small gardens in front and rear. The plan adopted certainly has the merit of simplicity, as will be seen by reference to the sketch-plan (see Illustrations), made from memory, of a house which was visited and inspected by their majesties King Humbert and Queen Margherita, as a prominent tablet over the front door testifies. The house is about twelve feet wide in the clear. Under the whole is a high, dry cellar, with access both from within the house and from the rear garden. The first story consists of a single large room which serves as a kitchen, dining-room and parlor. At one corner, enclosed by a light board partition, are the stairs leading up to the second story, which is divided into a large sleeping-room at the rear and a small one in front, cut off by the stairs. There is no hallway, and the front room is reached only by passing through the rear chamber. There is a third story

divided into two equal rooms, and a low loft used only for storage. When sold by Signor Rossi, this house was only two stories high. The floors are of square larch beams, covered underneath with rush netting and plastered, and above laid with good pine flooring, an unusual thing in Italy, most of the floors being of cheap concrete mosaic, and always cold and disagreeable. The kitchen stove or fireplace is of masonry, and of the standard type such as is found among the ruins of Pompeii, and has always been used by the Italians, everything being cooked by an open fire, with no oven of any sort. The chambers of the house are not heated. The walls are built of good, substantial rubblestone work, stuccoed outside and plastered within. The roof is of tiles. The total cost, including the land, was a little over three thousand francs. There is no supply of water nor drainage works of any description. Water-pipes are, however, laid in all the streets of the new quarter, and at the corners are hydrants, from which a full supply of water of a most excellent quality is constantly flowing, drawn from the neighboring mountains. The houses are all provided with out-of-door privies, built of brick, over tight cesspools, the emptying of which is attended to by the Commune.

To meet the requirements of very modest purchasers, some of the houses are built one story in height only, but with walls, framing of floors, etc., arranged so that another story can be added as the family increases in number or in means. This style of house seems to be much sought after, the families, even when large, preferring to begin on a small scale. In some cases two stories have been added to the original one-story structure. Of course such additions are made only by permission of Signor Rossi.

The house first described is a model of cleanliness throughout, the brass pots in the kitchen and the wooden floors being scrubbed and polished in a manner which would delight the heart of a Dutch housekeeper. The little garden in front is all abloom with roses and early spring flowers, and the walks are neatly gravelled. The owner evidently takes considerable pride in his house. Nor is it an exceptional instance, for it is one of a block of six or eight houses similar in plan and dimensions, each of which is as neat and tidy as the one visited, while in the adjacent blocks in every direction are groups of equally interesting houses, each group differing somewhat in external appearance, so that there is no barrack, made-to-order look about the colony. Most of the houses are painted in light colors, and all seem to be throughout in good condition. Nowhere in the quarter is there any appearance of anything like misery or even want. Indeed Signor Rossi thinks too much of his workmen to let them suffer while he is able to help them, and in return the operatives are uniformly faithful to their employers, and strikes or labor disturbances have never been known at Schio. Most of the work in the factory is by the piece, only twenty-three per cent of the operatives receiving fixed wages. In case of sickness or accident an allowance is made to the disabled, and in case of death the family is taken care of by the company.

Besides the separate dwellings such as those above referred to, the *Lanificio* Rossi has built a few houses expressly for the use of the old operatives, who are pensioned as long as they live, and if able to do any work at all are provided with material to spin at home, and so earn a few extra francs. There are also a few houses which are rented to those who do not care to buy, and at least one comfortable-looking house divided into separate rooms and rented to single men. Some of the houses in the new quarter are quite pretentious, as the officers of the mill have not disdained to avail themselves of the opportunities afforded to the workmen. A few are built with pretty, half-timbered Swiss work, and all of them show good taste on the part of the builder. The architect of all these houses was Signor A. Negrin, of Vicenza.

Church of San Antonio, Schio.

There are a number of other institutions which have been founded or fostered by Signor Rossi, including a large swimming-bath at which the charge is but five centimes; added to which are a number of single bath-rooms, at twenty-five centimes each. There is also a wash-house supplied with an abundance of hot-water from the condensers of the factory engine, where wives of the operatives can do their washing without charge. A Society of Mutual Help has been founded, with a capital of thirty-eight thousand eight hundred and twenty-one francs. It has about seven hundred members, and possesses a library of over a thousand volumes, most of them given by Signor Rossi; coöperative stores, which, with the help of the all-powerful senator, obtain provisions, clothing, etc., at bottom prices, its operations amounting to two hundred and fifty thousand francs per year; a furniture magazine, on the same principle, for the benefit of the operatives, handling eighty thousand francs' worth of household effects yearly; and a workingmen's club, which is provided with books, periodicals, etc. All of these enterprises are located in good, commodious quarters, and the workmen, as far as possible, are made to feel that they belong to them. There is also a comfortable little theatre for the use of the employés, and, by opposition, a handsome stone church built almost entirely by Signor Rossi and presented by him to the commune.

There are no hospital arrangements of any sort, but the Society of Mutual Help has established a system of medical service, of which the expense is divided among the subscribers; ice, medicine and attendance being furnished as required. Schio is, however, in a very healthy location, and there are few doctors' bills to pay. No liquors of any sort are allowed to be sold in the new quarter. Most of the workmen manufacture their own wine, and the city is little troubled with intemperance.

In the *American Architect* of April 4, 1885, an account was given of the *cités ouvrières* at Mülhausen, in Alsace. It is interesting to compare the work accomplished there with what has been done at Schio. In the first case it is the work of a society which avowedly aims only to build houses and sell them without losing money. In the second it is the work of an individual who is doing all in his power to make his workmen happier and healthier. At Mülhausen the houses are for sale to any one who may wish to buy. At Schio everything has been done exclusively for the operatives of the *Lanificio* Rossi, and the other inhabitants of the town profit only indirectly by the improvements. Mülhausen gives a man time and tells him to help himself. Schio gives a man pleasant homes, the best of schools, and helps him in everything, caring almost entirely for his children during the first seven years of their existence. The one is self-reliant in its effects, the other paternal in its care. The results at Schio are far more satisfactory in every respect, and yet, should Signor Rossi die or the *Lanificio* Rossi go to ruin, which is not an impossible event, we question if the well-equipped institutions would long survive, and whether in the long run the narrower, less generous plan followed at Mülhausen would not be productive of the most lasting good.

C. H. Blackall.

ENGLISH ARCHITECTURAL POTTERY.

TILES, TERRA-COTTA AND "DOULTON WARE."

Fig. 1.

THERE are numerous extant examples of pottery produced by the inhabitants of Britain before the Roman times, which are usually discovered in the mounds which the Britons erected over their dead, and are accompanied by bronze and bone implements as well as by axes, arrow-heads, knives, etc. It was not, however, until the thirteenth century that decorative tiles were made in Britain. Amongst some of the oldest specimens of glazed tiles employed in England may be mentioned the pavement discovered in the Roman Priory Church at Castle-Acre, Norfolk, a portion of which is in the British Museum. These tiles are ornamented with scutcheons of arms, and some bear the name of "Thomas;" the execution of them is exceedingly coarse, the cavities not being filled with clay of a different color, and they are greatly inferior to the Norman tiles of the same period. Glazed decorative tiles were much used in Mediæval times for paving sacred edifices, and they are sometimes called Norman tiles by old writers, from the supposition that they originated in Normandy. In Northern France there are some specimens of great age, although no tiles have as yet been discovered to coincide with the features of the Norman style of decoration, the most ancient being apparently of the thirteenth century. During the course of the fourteenth century some artistic skill was conspicuously shown in carved stone-work, metal-work and missal painting in Great Britain; it seems to have extended occasionally to pieces of pottery, but the records of such fine ceramic work are practically confined to a single group of this class.

The so-called encaustic tiles used for the floors, and to some extent for the walls, of ecclesiastical and domestic buildings since the beginning of the thirteenth century show, for the most part, a much higher degree of artistic and technical skill than did such other ceramic works of British craftsmen of the time, as have come down to us. The artistic execution of these tiles rapidly improved until they began to show decided merits of design: it is impossible that they were made in the great religious houses themselves, and these we know,

borrowed some of their arts from Continental sources, especially from Italy; but it is probable that the great stimulus to this class of pottery production in Great Britain, was largely imparted by the Normans.

Stone had supplied all the wants of the Normans until the twelfth century, but from this time new ideas everywhere appeared at once: tiles of red-earth of various forms were substituted for stone, their surface being covered with a thin layer of white glaze in which were encrusted patterns of darker earth, or *vice versa*. They were arranged in a graceful checker-work, rosettes, trefoils and scrolls of notched leaves were formed, and combined with graceful borders: sections of divided circles were ornamented with stars or heraldic suns. Warriors heavily armed and clad in armor, and mounted upon richly caparisoned horses, busts, lions, eagles and all other things that fancy and heraldry could generally invent, animated the cold pavements. Most of the ornamental combinations resemble the designs we are accustomed to see in the textile fabrics of the East, and we ought to be the less astonished at this when we remember the visits of the Crusaders to Syria, to Byzantium and Palestine, where this character of ornamentation was so largely employed from the ninth to the twelfth century.

The manufacture of decorative mediæval tiles in England, rapidly developed from the thirteenth until the sixteenth century, and in some districts even down to a later period. Kilns have been discovered at Malvern and other places in Worcestershire, in Gloucestershire, Wiltshire, Shropshire and Staffordshire. The earliest tiles were of one color, while the designs upon them were either incised, or impressed, or embossed. Inlaid tiles were next produced, these being in fact first impressed, and then having had the hollows filled with a differently colored clay; this kind came to be finally distinguished by rich design and excellent workmanship. Sometimes small tiles of different shapes and colors were arranged in composite patterns of geometrical characters.

The use of several colors laid on a single tile indicates a later time. The tiles of the Chapter House at Westminster, the Abbey Church of Malmesbury, Lillestall Priory in Shropshire, Malvern Priory Church, Prior Cuddin's Chapel at Ely, Gloucestershire Cathedral and Chertsey Abbey may be mentioned as illustrating the several varieties of tiles we have named.

Two examples of these encaustic tiles are given in Figures 1 and 2; the first being from Monmouth Priory, and the second from Great Malvern.

There are in existence a great many English earthern-ware vessels, which we generally attribute to a time at least as early as the Tudor period, 1485–1603, and usually they are of a buff color, having a fairly hard body, covered nearly all over with a green enamel. Upon some specimens of similar ware we notice letters or dates as on the stove tile in the British Museum which is of Elizabeth's time, but this piece is, however, made from a red clay. This style is shown in Figure 3, and exhibits an amount of technical accomplishment hardly usual at the time in English native wares of this class, and it is probable that it may be of German origin.

Fig. 2.

The glaze of the English tiles which we have thus far mentioned, was produced either by lead or a glassy substance, generally by the former from its being applied in the form of powdered galena, the chief ore of lead, a compound of that metal with sulphur. The use of red lead, one of the oxides of lead, and of glass containing as a chief ingredient a fusible native silicate, such as felspar, is of later date; but when common salt was introduced as the material for glazing earthenware an entirely new departure in ceramic production was made, and now in the present time large quantities of architectural pottery are glazed with salt. The salt glaze can be imparted only at a very high temperature, and it is therefore necessary that the material to which it is applied should be capable of withstanding a high degree of heat without fusing or even softening, or in other words, the clay must possess refractory properties.

Lambeth has lately come forward as a prominent place in England for the manufacture of architectural pottery of all kinds. The early history of Lambeth as a pottery centre is somewhat obscure, but we learn from English patent reports that in 1671, a patent was granted by the English Government to John Ariens Van Hamme, a Dutch potter, who had settled in Lambeth, for "the art of making tiles, porcelain and other earthern-ware after the way practised in Holland." The pottery of Messrs. Stiff & Sons, which is called the "London Pottery" was established in Lambeth as early as 1751; and the "Lambeth Pottery," that of Messrs. Doulton & Co. in 1818.

Nottingham stoneware has been famous since about the middle of the eighteenth century, and the Castle Museum at Nottingham possesses several good examples of this fine brown stoneware, one tile in particular impressed with geometrical ornaments, and measuring five-and-one-quarter inches square, is a rare and unusual piece, and is thought to have been a part of a pavement from the house of a former owner of the pot-works.

Bristol and Liverpool became famous for their delft toward the latter part of the seventeenth century. Frank's delft works, where large numbers of tiles for fireplaces and dairies were painted and otherwise ornamented, were founded in Bristol toward the close of the seventeenth century, and the factory continued in operation until about one century ago, when delft ware had ceased to be fashionable. Another manufacturer of delft ware in Bristol was Joseph Flower. It is difficult to distinguish between the wares produced by the two manufacturers in Bristol, and it is equally difficult to attach dates to the uninscribed pieces; but a tile picture representing St. Mary Radcliffe, and bearing the arms of Bishop Butler, now in the Museum of Practical Geology, has been examined by the writer, and as Bishop Butler's episcopate extended from 1738–1750, its date can be approximately ascertained.

Fig. 3.

It is thought that Mr. Willitt's large picture which is composed of seventy-two tiles, and which depicts "Hogarth's March to Finchley," was painted in about 1754. Pairs of pictures for the fireplace composed of nine tiles, each representing a dog and a cat as guardians of the hearth, were at one time not uncommon in Bristol dwellings, and in one of these tile pictures a dog has the word "Bristol" impressed upon its collar with the date 1754.

Liverpool excelled all other centres of delft manufacture in transfer-printing on this class of pottery, and the process was developed there by two separate printers as early as the middle of the eighteenth century. The process was a very rapid one, and the inventors, Sadler & Green, readily printed five hundred tiles with different patterns in six hours without assistance. These tiles measured about five inches square, and in addition to being better potted were much harder than the Dutch tiles imported at the same period. The printing was in either black or red, and the tiles were employed for lining stoves and walls, and became quite fashionable. In some of these tiles theatrical characters were not infrequently represented as shown in Figure 4, which is taken from a tile in the panel owned by the South Kensington Museum.

Fig. 4.

Regarding the influence of Josiah Wedgwood on English ceramics, it is hardly necessary to remark that although he has had many imitators, he has had no equals. It would be impossible in an article of this character, to fully enlarge upon the merits of the numerous leading manufacturers of architectural pottery in England; but even in a sketch of this kind it is not possible to omit the name of Mr. Herbert Minton, to whose great energy and practical intelligence, the revived art of architectural pottery manufacture in England owes so much. The history of the revival of this line of production in Great Britain, may be said to commence with about the latter half of the present century, and through the efforts of Mr. Minton a success was achieved of which all English-speaking people should be justly proud.

The branch of architectural pottery, which rightly claims a large share of attention at the present time is that of terra-cotta. In England, the friezes, cornices and other highly-ornamented work in terra-cotta of the Manor House at Barsham, and the Parsonage House at Great Snoring, both in Norfolk, erected during the reign of Henry VIII are worthy of particular notice, and the use of terra-cotta for decorative panels and bas-reliefs, appears to have been popular during his time. The gateway of York Palace, Whitehall, designed by Holbein, was decorated by four circular terra-cotta panels which are still preserved at Hadfield, Peveral, Hants. The gateway of the rectory of Hadleigh Church, Suffolk, erected at the close of the fifteenth century was very carefully restored about forty years ago; the terra-cotta for the purpose being creditably reproduced at the kilns near Hadleigh. From the latter part of the fifteenth century until after the reign of Elizabeth, terra-cotta was used only in large

and expensive buildings, but at the beginning of the eighteenth century the use of terra-cotta was by no means uncommon in Great Britain, but soon after the reign of Queen Anne its use was discontinued.

The writer a short time since was particularly pleased with the fine effect produced by the terra-cotta reredos executed by Mr. George Tinworth, under the direction of the late George Edmund Street, for York Cathedral. This work represents the Crucifixion at the moment of the erection of the cross, the soldiers being engaged in raising it into an upright position. At the foot of the cross is a group of soldiers casting lots for the vesture of the Lord; on the left appear the Virgin Mary and the Apostle John, and a little lower Mary Magdalen; the Apostle Peter is also introduced standing behind a tree; one of the malefactors is in the act of being fixed upon the cross, and is receiving the usual stupefying draught. The centurion is shown on horseback with other officers standing by; on the right, the other malefactor is represented upon a cross, and the sentinel is standing by in an attitude of adoration; the vessel is placed in front containing vinegar which a boy is tasting. Jews are standing by mocking the Saviour; a negro appears in this part of the panel looking up at Christ, the spectators in the background are in confusion, and the Roman soldiers are endeavoring to restrain them.

One of the first objects which now meets the visitor's gaze as he enters the Architectural Court of South Kensington Museum is a large terra-cotta panel by Mr. Tinworth, which is entitled "The Release of Barabbas." [See Illustrations.] In this panel, Pilate, who occupies the centre of the piece is pronouncing sentence on our Lord, who is delivered to be crucified, and is being led away bound by the soldiers in attendance; directly behind the Saviour the Virgin Mary and the Apostle John appear as spectators, together with some of their friends; a Roman officer is speaking to another spectator on the left of St. John, and on the extreme right the Apostle Peter in an agony of remorse is restrained from approaching the Lord by another soldier. On the right and left of Pilate are attendants holding water and towels that he may wash his hands, and so disown complicity in the guilt of what he has done; while Pilate's wife, with a Roman companion stands behind. On the left Barabbas is released amid the congratulations of the bystanders, and the persons of various nationalities appear in the background. To the left is a Roman watchman denoted by the bells upon his dress, and a negro is attempting to speak to Christ, and is addressing a soldier with a view of obtaining the desired interview. The place of the trial is set forth by the architectural embellishments in the background, and a broken vessel and a fallen capital in front are introduced as symbolizing the decay of the old dispensation; a palm branch is lying on the ground recalling to memory the recent triumphal entry of the Lord into Jerusalem. Allusions are made to the following texts: Acts iv: 27, 28; Gen. i: 20; Matt. xxvii: 24; Psalms cxli: 6; Cor. ii: 2; Eccles. viii: 12, 13.

Directly behind the terra-cotta panel which has just been described there is another of equal size, entitled "Preparing for the Cross." The time selected for illustration is that immediately before the crucifixion, the necessary preparations being almost completed. The Saviour stands in the centre, his eyes are closed as if in prayer, the soldiers divest him of his clothing; Simon the Cyrenian is kneeling before the Lord in worship, having assisted in bearing the cross to the place of crucifixion; on the right a soldier holds the writing which is to surmount the cross, and also the cup containing the draught which is provided for the Saviour; further to the right soldiers are binding one of the thieves; the wife of this malefactor with her infant appears just behind on the left; in front, the soldier who has been digging the hole to receive the cross is resting against a beam, and is regarding the Lord with sympathetic interest. The centurion in charge of the crucifixion is speaking to the Apostle John who stands behind accompanied by the Virgin, her sister and Mary Magdalen. Still further to the left are soldiers preparing the second malefactor for execution, this man having received the draught usually administered appears to be stupefied from its effects, his parents attend in the background. In this part of the panel are seen Nicodemus and Joseph of Arimathea together with mounted Roman soldiers, a woman is represented extending her lifeless child towards the Lord in the hope that it may be restored to life; the Apostle Peter appears in the attitude of repentance just behind a soldier who is pushing back the crowd, and close to a Jew is pointing to the Roman banner in the spirit of the words, "We have no king but Cæsar;" another Jew is engaged in conversation with a soldier who holds the inscription; the crowd behind is kept back on all points by soldiers acting under the direction of the centurion in command.

The examples which we have just described are fine specimens of terra-cotta in high relief, other specimens of Mr. Tinworth's execution of terra-cotta, but in low relief were viewed by the writer with much pleasure at the pottery of Messrs. Doulton & Co., at Lambeth, and we have selected for illustration one of his works of this character [see Illustrations] the subject being suggested by a poem of Mr. Edmund Gosse.

> "Hear me! and grant for these my pious sons
> Who saw my tears, and wound their tender arms
> Around me, and kissed me calm, and since no steer
> Staid in the byre, dragged out the chariot old
> And wore themselves the galling yoke, and brought
> Their mother to the feast of her desire:
> Grant them, O Hera, thy best gift of gifts."

This poem is founded on the legend of Cydippe, the priestess of Juno at Argos, who, on one occasion wishing to repair to the temple of the goddess, could not procure oxen to draw her chariot; her two sons Cleobis and Biton consequently put themselves under the yoke and drew her to the temple, amidst the acclamations of the multitude, who congratulated the mother on the filial affection of her sons. Cydippe entreated the goddess Juno to reward them for their piety with the best gift that could be granted to mortals. They immediately fell asleep and woke no more; the goddess thus showed that the gift of gifts is death.

Mr. Henry Doulton, of Lambeth, about the year 1870 introduced into his works (previously confined to the manufacture of drain-pipes and other rough ware, most of it salt-glazed stoneware), an entirely new class of pottery of high quality, not merely as to fabric but in its artistic excellence; it may be said to have been founded in a measure upon the German stonewares, but it possesses merits as to color, form and decoration, which are entirely original. Some of the artists who designed it such as Mr. George Tinworth, whom we have mentioned, and Miss Anna B. Barlow, have acquired a high reputation.

The architectural pottery known as "Doulton Ware" is completed in one burning, the forms being decorated in a soft state, and the colors applied as soon as the article is dry. The colors are developed in the process of firing by means of fumes of salt which are thrown into various parts of the kiln while the ware is at a white heat. The fact that the ware is unprotected in the kiln, from the smoke and sulphur rising from the fuel, and that the material is brought to the vitrifying point makes the proper application of the glaze a difficult feat.

The methods of treatment for "Doulton Ware" include incising, modelling, *appliqué*, carving, etching, *pâte sur pâte*, *repoussée* work, etc.

The favor with which the various products of the Lambeth Art Potteries have been received by art critics and the public has given an important impetus to female employment. Between two and three hundred lady artists and assistants are now occupied entirely on the work, all of whom have been specially trained for their respective branches, and have also graduated in the various classes connected with the Lambeth School of Art, or other schools connected with the South Kensington Art Department.

"Doulton Ware" is employed largely for architectural purposes not only in London, but also in other portions of Great Britain, the Colonies and in India. Glazed terra-cotta and fire clay are also produced at the Lambeth potteries: these materials which are now extensively manufactured, are chiefly employed for decorating stoves, fireplaces, grills, mantel-pieces and other large work, and lend themselves admirably to interior architectural treatment.

Charles T. Davis.

THE ILLUSTRATIONS.

[*Contributors are requested to send with their drawings full and adequate descriptions of the buildings, including a statement of cost.*]

TERRA-COTTA BAS-RELIEFS, BY MR. GEORGE TINWORTH, SCULPTOR.

A DESCRIPTION of these panels may be found in the preceding article on "English Pottery." As for the sculptor himself, it may be said that two years ago an exhibition was opened in London of works in terra-cotta by George Tinworth, which at once revealed to Englishmen a sculptor of marked originality and power. Mr. Ruskin's praise was not wanting, and it described the genius of Tinworth as "full of fire and zealous faculty, breaking its way through all conventionalism to such truth as it can conceive."

The sculptor was previously but little known, although he had occasionally sent some of his panels to the Royal Academy. He was born in 1844, and was the son of a wheelwright, whose trade he followed and who treated his first attempts at modelling very harshly, and reviled him for "wasting his time" on them. But he had a mother who encouraged his love for art, and fostered in him a strong predilection for religious themes. Working by day at his trade, at night he studied at the Lambeth Art Schools under Mr. Sparkes, and later entered the Schools of the Royal Academy. Here in 1865, he won the second silver medal, and in 1867 the first in the antique school. He first appeared at the Royal Academy in 1866, with a group in plaster, called "Peace and Wrath in Low Life." In the following year, his father being dead, Mr. Sparkes introduced him to Henry Doulton, the head of the Lambeth potteries, with whom he has ever since remained, moulding in clay those scenes from Bible history which have chiefly given him his fame. Tinworth is, in the common meaning of the phrase, "an uneducated man," but there is one book with which he is thoroughly familiar, and that is the Bible. Most of his works are inspired by the events narrated therein, and his best achievements have represented such events. He is sincerely pious without being bigoted, and is an unspoiled, honest workman. In his sculpture he is strongly realistic, and free from all artificial graces, telling the story in a direct and truthful way, and with energy and passion. He is fond of using many accessories, and introducing common incidents; but never suffers them to obscure his central idea.

His most important works are the panels done for the reredos of

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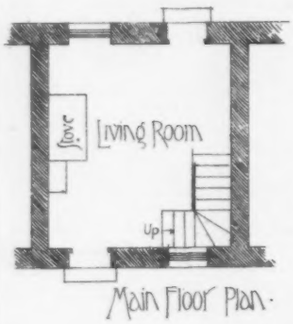
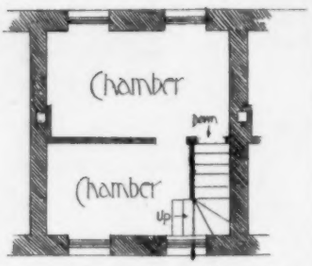


Main Floor Plan.



Upper Floor Plan

a Superintendent's House

Houses for Workingmen - at Schio - Italy -

The School

The Crèche.

C H Blackall del

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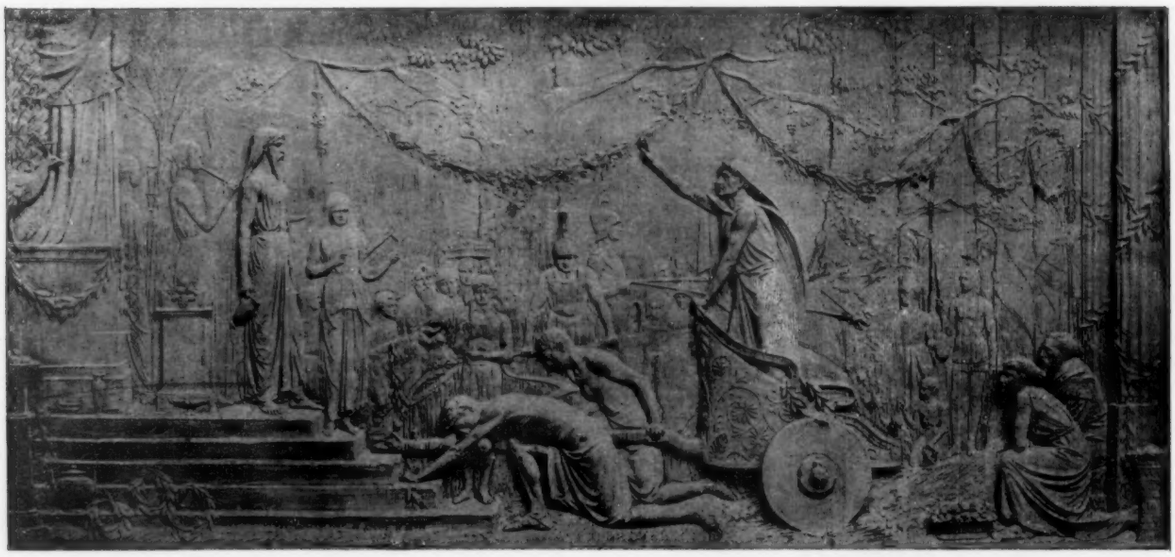
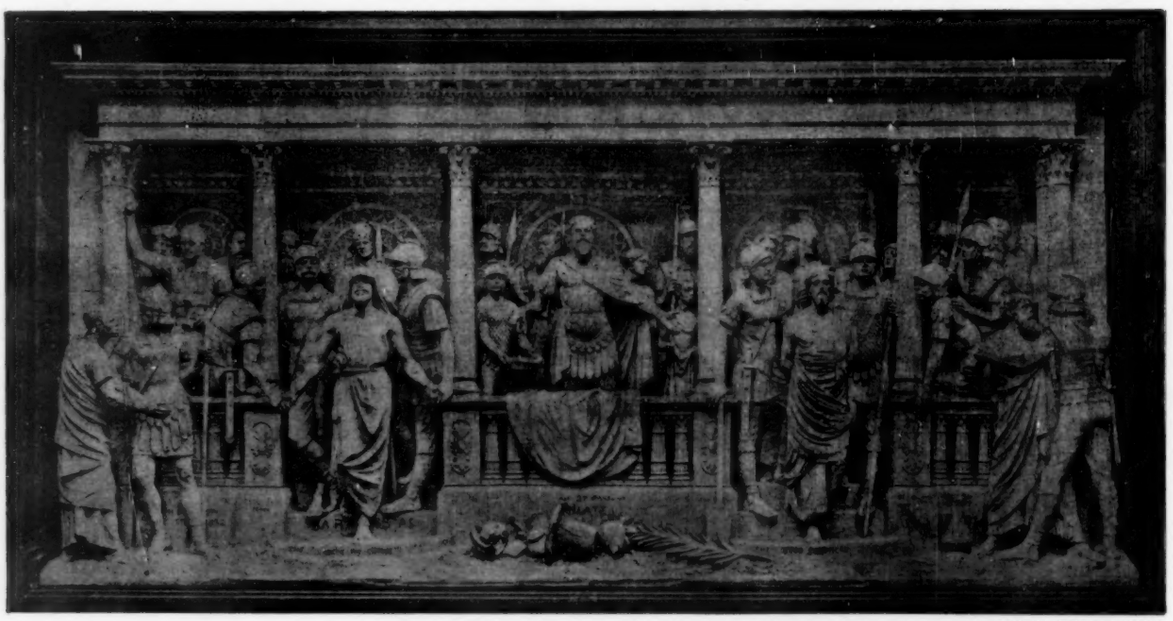


The Sons of Cydippe. — G. Tinworth. Sculptor.



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The Release of Barabbas. — G. Tinworth. Sculptor.

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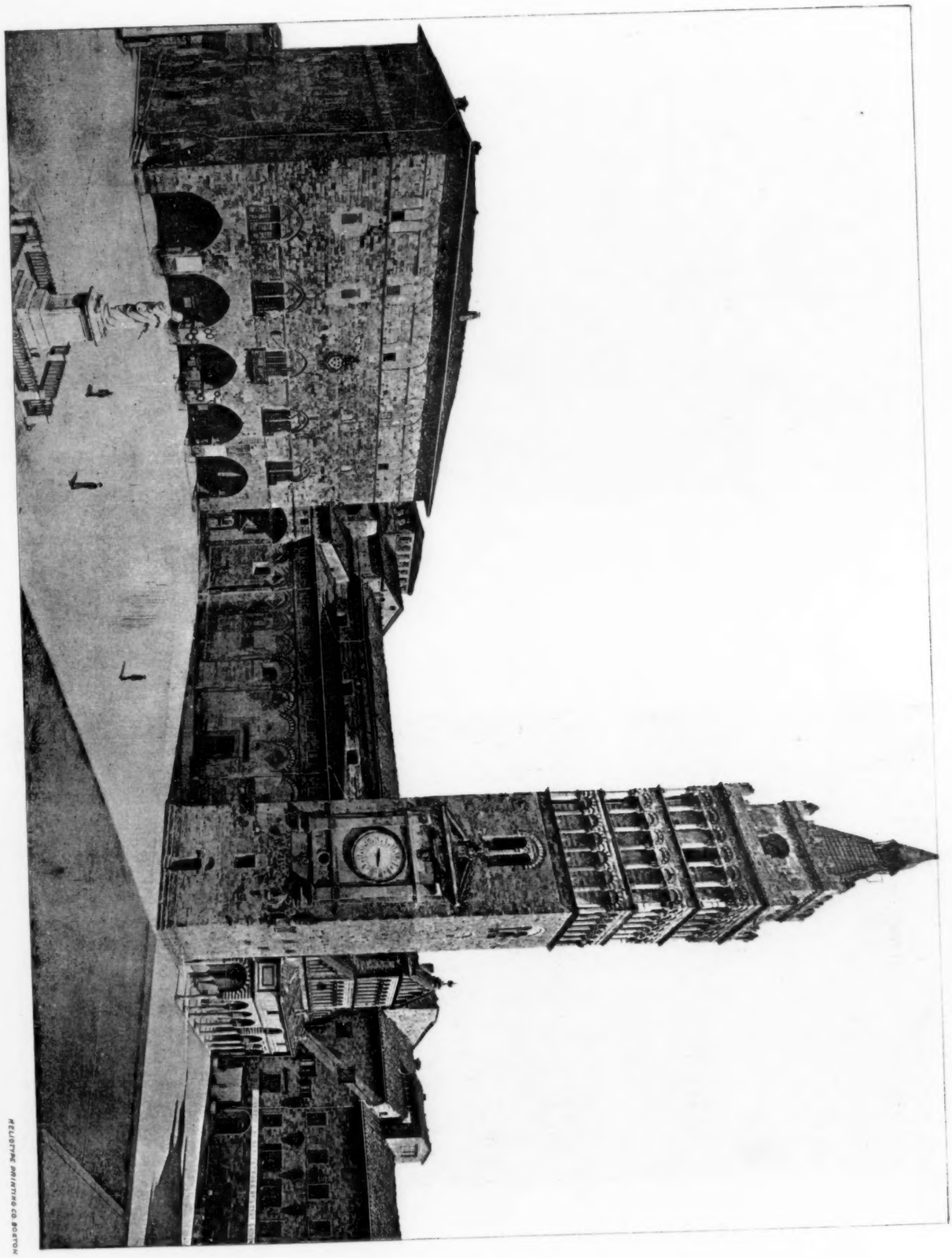

Plaza of the Cathedral, Pistoja, Italy.

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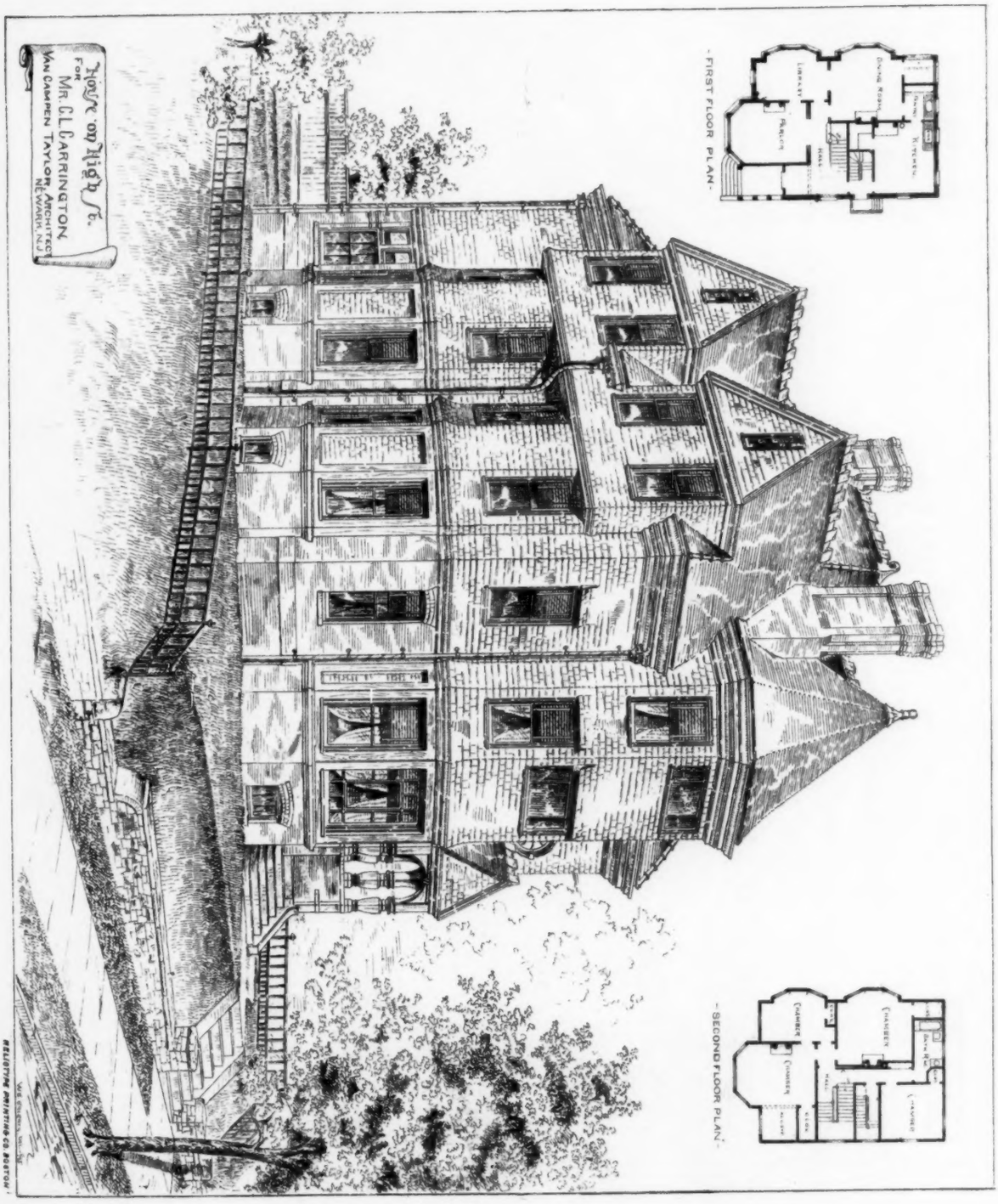

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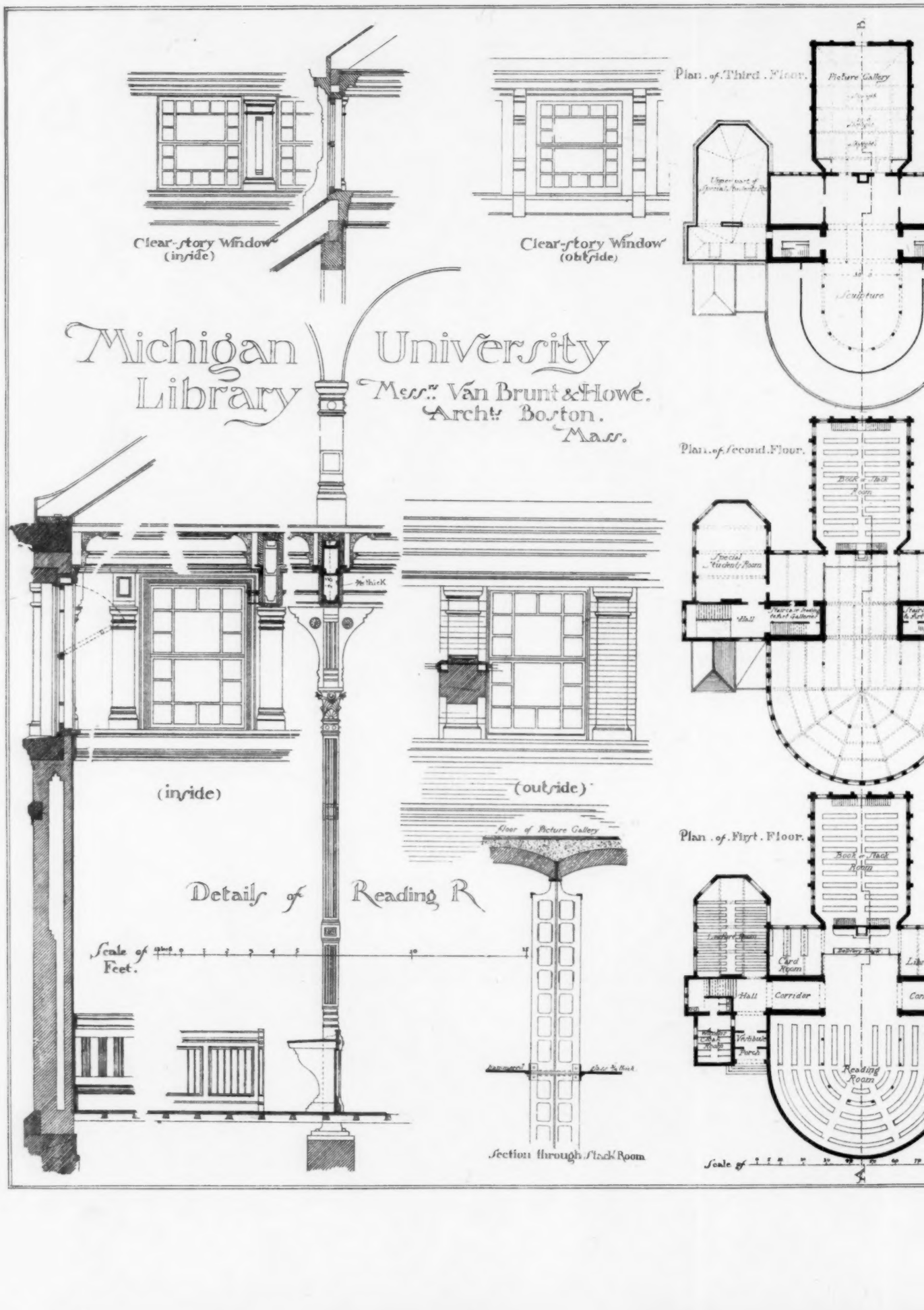

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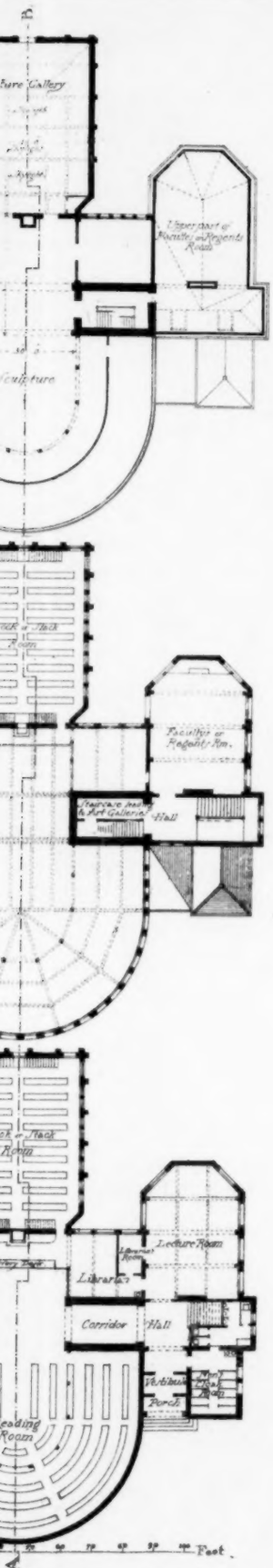
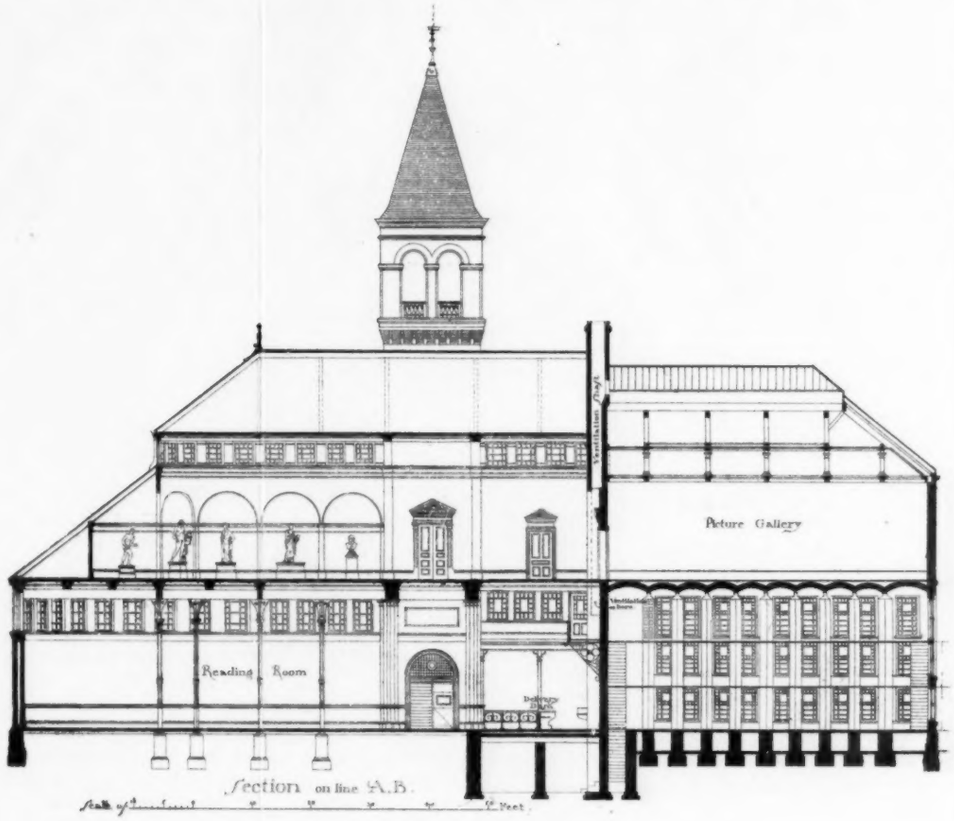
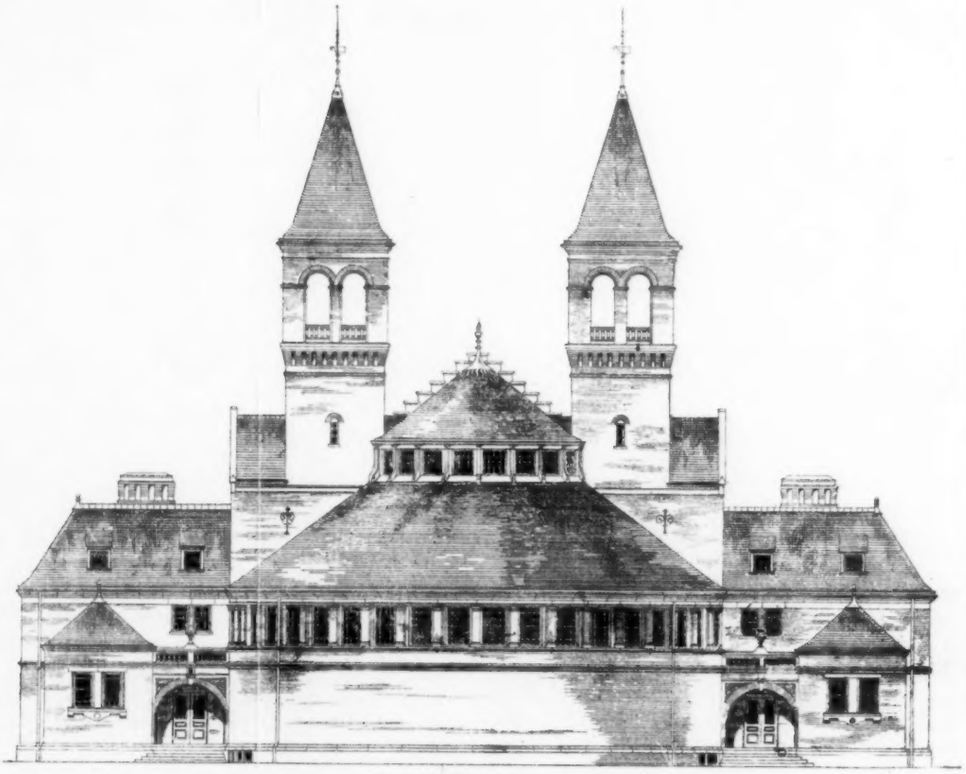






Front Elevation

HELIOTYPE PRINTING CO. BOSTON

York Minster, under the supervision of the late G. E. Street, and for the Guards Chapel. These comprise many Scriptural episodes, the most prominent being "The Entry into Jerusalem," "The Judgment of Pilate," "Preparing for the Crucifixion," and "The Descent from the Cross." Others are "The Distress of Herod," "The Remorse of Judas," "The City of Refuge," "The Last Supper," "The Raising of Lazarus," "The Taking of Samson," and "The Denial of Peter."

The few secular works which he has shown include a large fountain (and every group on this is a Scripture subject having some reference to water), an illustration of E. W. Gosse's poem, "The Sons of Cydippe," "A Football Scrimmage," and "The Wheelwright Shop," the last containing a portrait of himself carving in the shop when a boy.

THE PIAZZA DEL DUOMO, PISTOJA, ITALY.

PISTOJA is an ancient town of 13,500 inhabitants, situated among the mountains twenty-one miles northwest of Florence. During the Middle Ages it was the centre of the fiercest struggles between the Guelphs and Ghibellines, and in the history of art, the town which somewhat resembles Florence in miniature held an important rank, and was foremost among the Tuscan republics in fostering artistic progress. At Pistoja are found some of the earliest attempts at sculpture in Tuscany. After the fourteenth century, the town became dependent on Florence, both politically and in the province of art.

The Cathedral of San Jacobo was built in the twelfth century, and remodeled in the thirteenth. The exterior possesses little of interest except the bas-relief over the door by Andrea della Robbia, and the ornamentation of the vaulting by Luca della Robbia. The interior was restored in 1838, and whatever merit it once possessed was totally obliterated. The campanile was originally a fortified tower, called the Torre del Podestà, and still bears the arms of the Pistojan governors. The three series of arches at the top were added in imitation of the Pisa cathedral when the tower was adapted to its present purpose.

Opposite the cathedral is the Baptistery, an octagonal structure erected in 1339, after a design by Andrea Pisano. Opposite at the left of the view shown in the photo-print is the Palazzo dell Commune, erected in 1294–1385.

LIBRARY OF UNIVERSITY OF MICHIGAN. MESSRS. VAN BRUNT & HOWE, ARCHITECTS, BOSTON, MASS.

THIS building was completed in 1883. It is constructed of brick. The book-stack is fire-proof, and the rest of the building is protected from fire by mill flooring and other devices. There is no furring. The main point in the designing of this plan was to place the delivery-desk in such position as to have immediate communication by lift and otherwise with the book-stack, and at the same time to command all the reading-room floor. The book-stacking differs from that devised by the same architects for the library of Harvard College, in having the floors of North River slabs, or of glass instead of iron grating. The stacks are three feet apart instead of two feet ten inches, as in the Harvard example. The heating and ventilation have proved successful, and the building in all its parts has given great satisfaction to the authorities. The upper floor contains a gallery of fine arts.

HOUSE FOR MR. CHARLES L. CARRINGTON, HIGH ST., NEAR CLINTON AVE., NEWARK, N. J. MR. VAN CAMPEN TAYLOR, ARCHITECT, NEWARK, N. J.

THE house is now in course of erection on one of the principal residence streets of the city. The first story will be built of North River brick, laid in red mortar, with Belleville stone trimmings. The second story, etc., will be of frame shingled with cedar shingles. The roof will be slated. The interior will be finished with painted walls, tiled fire-places, and hard-wood stairs and mantels. The cost will be about $12,000.

WORKMEN'S HOUSES, SCHIO, ITALY.

FOR description, see article elsewhere in this issue.

THE EDINBURGH VEGETABLE MARKET.

VIEW OF THE EDINBURGH VEGETABLE MARKET.

SEVERAL years ago, before it was decided whether or not what is now Copley Square, Boston, should become a public square or should be absorbed as ordinary building sites, Mr. Edward Atkinson, perceiving the desirability of ensuring that if any buildings should be placed therein they should at least be as low as possible, bethought him of the new Vegetable Market at Edinburgh, and the inquiries he made resulted in the procurement of the following information: —

EDINBURGH, November 28, 1878.

PROFESSOR JENKIN: —

Dear Sir, — The Lord Provost has handed me your note of yesterday, enclosing letter from Mr. Atkinson, of Boston, asking information as to the roof of the Vegetable Market of which I was architect.

In reply to Mr. Atkinson's question as to how to procure plans, etc., I may state that there are no drawings of this structure but my working plans. But this building is very peculiarly situated, and I think it somewhat doubtful how far such plans would be of use to him. I therefore beg to enclose a general description and rough sketch, to which Mr. Atkinson is welcome, and if, judging from these, he still thinks that drawings would be of use to him, I shall be happy to provide copies.

There are no photographs extant. The enclosed small engraving, made for the tenant of a portion of the building, may, however, help to convey an idea.

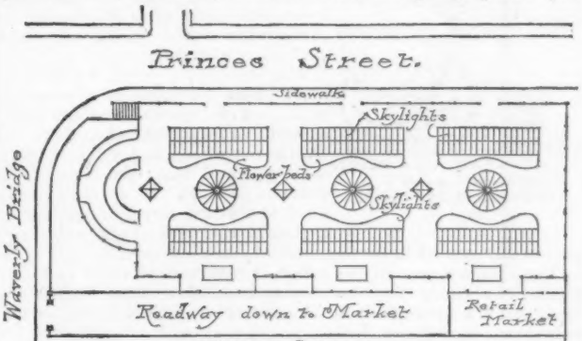
Yours faithfully,

R. MORHAN.

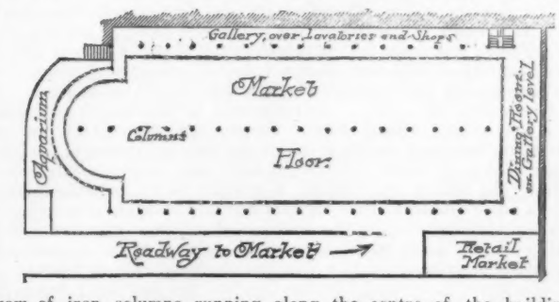
DESCRIPTION OF THE EDINBURGH VEGETABLE MARKET.

This building, which is about four hundred feet long and one hundred and fifty feet wide, adjoins Princes Street, the leading thoroughfare of the city, near its eastern extremity. The floor of the

market is twenty-eight feet below the street level, and no part of the structure is higher than the street level. This restriction in the height is enforced by the rights of proprietors on the opposite side of the street. The necessity for restricting the elevation of the structure within this limit, and at the same time (owing to its proximity to so important a thoroughfare) the desirableness of a somewhat more sightly structure than a commonplace roof, suggested to the architect the form of roof eventually adopted: namely, a level platform entering directly from the street, having large glazed open-



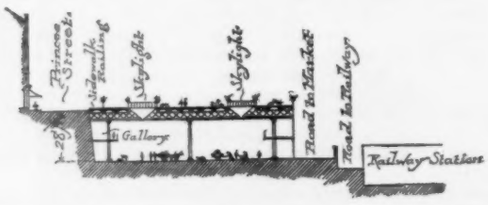
ings at regular intervals for lighting the market below, and ornamental railings, pedestals and vases surrounding the general platform and the said openings, and further decorated with flower borders and plats. In summer these vases and plats are stocked with a great variety of plants which are removed in winter, but some parts are kept in grass all through the winter without trouble. Though nominally a garden, the greater portion of the roof consists of promenade space and of the large openings above mentioned, the floral decorations forming a trimming to these more utilitarian parts. The general surface is formed of asphalt, on brick arching and concrete, resting on iron bearers, which again rest on main girders spanning the whole width of the market-house, with a rest at the middle on a



row of iron columns running along the centre of the building. These columns rest on piles, some of which are driven thirty feet into the ground. From the nature of the situation there is no elevation towards Princes Street, but on the opposite side, and on a great portion of the ends there is an arcaded façade, in cast-iron and glass,

affording, with the roof-lights before mentioned, abundant light for the interior of the market. The floor of the market is paved with asphalt.

The top of the building is fitted with hydrants and hose for watering the flower-beds, and the interior with fire-plugs and hydrants for



cleansing. The market being a wholesale one, where the market-gardeners bring their carts with produce, it was desired to have as few obstructions in the general area as possible; hence the long span adopted for the main girders. The interior is fitted up for lighting by gas, but it is at present in contemplation to introduce the electric light.

TALL CHIMNEY CONSTRUCTION.[1]—III.

WROUGHT-IRON CHIMNEY. — MESSRS. SCHNEIDER'S CREUSOT WORKS.

	ft.	in.
Height above ground	279	0
Diameter at the top	7	6½
" " base	22	11½
Weight, 80 tons.		

Its dimensions, therefore, obviously precluded its being raised in a single piece without the employment of appliances which were considered inadmissible; under these circumstances, it was decided to erect the chimney in parts, without the use of any fixed scaffolding whatever.

The chimney, of which we have already given the principal dimensions, is founded on a mass of masonry rising about three feet three inches above the level of the ground, and weighing about three hundred tons; the base of the structure — which is spread — being fixed to this masonry by a very strong angle-iron ring riveted to the chimney-plates, and secured to the foundation by holding-down bolts.

The chimney, properly so called, is composed of rings four feet one inch in height, the plates varying from 0.552 inches thick at the base, to 0.275 inches thick at the summit. At the ninth ring the circumference is made up of eight plates, while at the upper part the rings are each composed of four plates only. To protect the plates from the heat arising from the combustion of the gas, and to prevent the lower rings from being injured, an inner shaft of fire-brick is carried up within the iron casing for the height of eight rings.

CHIMNEY-STACK AT THE WEST CUMBERLAND HEMATITE IRON WORKS.

Engineer, the late Professor Macquorn Rankine.

This chimney represents nothing new in design or construction, and is not of any extraordinary size or figure; but as it is a successful example of the application of correct principles and good workmanship to a structure of a useful and ordinary kind, the publication of an account of it may prove serviceable.

Duty. — The duty which this chimney has to perform is to carry off the gaseous products of combustion from four blast-furnaces, and from various stoves and boilers that are heated partly by burning the inflammable gas from the blast-furnaces, and partly by coal. The total quantity of solid fuel consumed may be estimated at about ten and one-quarter tons per hour when all the furnaces are at work.

Figure and Dimensions. — Above ground the chimney is a frustum of a cone with a straight batter. Underground there is a plinth or basement, octagonal outside at the ground line and square at the bottom; cylindrical inside and pierced with four circular openings for flues. The reason for adopting a straight batter, notwithstanding that a curved batter enables certain theoretical conditions to be more perfectly fulfilled, is that the accuracy of building with a straight batter can be tested at any moment by a glance of the eye without the aid of instruments. The principal dimensions are as follows: — Height above the ground line, two hundred and fifty feet; depth of foundation below the ground line (including a layer of concrete three feet deep), seventeen feet; total height from foundation to top, two hundred and sixty-seven feet. Inside diameter at top of cone, thirteen feet, inside diameter at two feet above bottom of cone, twenty-one feet, ten inches; inside diameter in basement, eighteen feet, ten inches; inside diameter of archways for flues, seven feet, six inches; outside diameter at top of cone, fifteen feet three inches, outside diameter at two feet above bottom of cone, twenty-five feet, seven inches; outside dimensions of square basement, thirty feet by thirty feet; outside dimensions of foundation course, thirty-one feet, six inches by thirty-one feet, six inches; outside dimensions of concrete foundations thirty-four feet six inches by thirty-four feet, six inches. The change from the square to the octagonal shape in the basement is made gradually by stepping the brickwork at the corners.

Thickness of Brickwork, Stability and Load. — It had previously been ascertained by observation of the success and failure of actual chimneys, and especially of those which respectively stood and fell during the violent storms of 1856, that in order that a round chimney in this country may be sufficiently stable, its weight should be such that a pressure of wind of about fifty-five pounds per square foot of a plane surface directly facing the wind, or twenty-seven and one-half pounds per square foot of the plane projection of a cylindrical surface — that is to say, a pressure equivalent to the weight of a layer of brickwork three inches deep, and of an area equal to the vertical section of a round chimney — shall not cause the resultant pressure at any bed-joint to deviate from the axis of the chimney by more than one-quarter of the outside diameter at that joint.[2]

By calculating according to that principle, the thickness of brickwork in the cone was determined to be as follows: — Uppermost eighty feet of height, one and one-half bricks; next eighty feet of height, two bricks; next eighty-eight feet of height, two and one-half bricks; lowest two feet of height, increasing by steps from two and one-half bricks to four bricks, in order to spread the pressure on the basement.

The bed-joint of least stability is two feet above the ground line, and the deviation of the resultant pressure from the axis of the chimney at that joint, which would be produced by such a wind as has been mentioned is six feet, four inches, being a fraction of an inch less than one-quarter of the outside diameter. The thickness of the arching in the openings for flues is three bricks. The following are the intensities of the mean pressures due to the load on different bed-joints: — At two feet above the ground line eight tons on the square foot; in basement at the springing of the arches three tons on the square foot; on the upper surface of the concrete two tons on the square foot; on the ground below one and six-tenths tons on the square foot.

Fire-brick Lining.—The thickness of brickwork already stated, include the fire-brick lining, whose thicknesses are as follows: — In the uppermost one hundred and sixty feet of the cone, one-half brick; in the lower part of the cone, the basement and the flue archways, one brick. The fire-brick lining is bonded with the common brickwork in the ordinary way, the only difference being that the fire-bricks are laid in fire-clay, and the common bricks in mortar. The reasons for adopting this mode of construction in preference to an internal fire-brick chimney are as follows: — First when the fire-bricks are bonded with the common bricks they contribute along with the common bricks to the stability of the chimney (Mr. Edwin Nash, F.R.I.B.A., says the fire-brick lining must never be considered as part of the structure), whereas, if an internal fire-brick chimney had been used, an additional thickness of common brickwork would have been required in order to give sufficient stability to the outer cone; secondly, unless the internal chimney is carried up to the top of the outer cone there is a risk of damage through the explosion of inflammable gaseous mixtures in the space between; and thirdly, under the same circumstances there is also a risk of the cracking of the outer cone at and near the upper end of the inner cone through unequal heating at that place. Vertical cracks in a chimney are the more dangerous the higher the level at which they occur, because the safety of the higher part of a chimney depends more on cohesion and less on weight, than that of the lower parts. When such cracks take place near the ground they are of little or no consequence. The basement is paved inside with six inches of fire-brick resting on six inches of common brick which rests on the concrete.

Ordinary Brickwork. — The ordinary brickwork is built of white bricks of very good quality, supplied by the Iron Company. It is built in English bond. In the basement there is one course of headers to every two courses of stretchers, in the cone one course of headers to every three courses of stretchers.

Mr. Clegg, in his "*Manufacture of Coal-Gas*" (J. Weale, 1859), page 176, says: — "At the distance of about every fifteen feet, a wrought-iron hoop two and one-half inches by one-half inch thick must be built into the brickwork as the chimney rises; this is necessary to avoid cracks."

Strips of No. 15 hoop-iron tarred and sanded, are laid in the bed joints of the cone at intervals of four feet in height, with their ends turned down into the side-joints. Care was taken to bed the hoop-iron on the common brickwork, and not on the fire-brick lining. The length of hoop-iron in each bed joint in which it is laid is twice the circumference of the chimney.

Mortar. — In the concrete foundation, the basement, and a small part of the cone the mortar was made of hydraulic lime. Owing to an unexpected difficulty in obtaining such lime on the spot, it had to

[1] A paper by R. M. Bancroft and F. J. Bancroft, read before the Civil and Mechanical Engineers' Society. Continued from page 6, No. 497.

[2] See "*Proceedings of the Philosophical Society, of Glasgow*" for 1856, page 14.

be brought from a distance at considerable expense, and therefore the mortar for the rest of the building was made of a very pure lime from the immediate neighborhood, rendered artificially hydraulic by a mixture of iron scale from the rolling-mills at the works, it having been in the first place ascertained that the supply of iron scale could be furnished to the contractor with sufficient rapidity.

The following are approximately the proportion of the ingredients of the mortar by measure: — Lime, two measures; scale, one measure; sand, five measures; total, eight measures. It is scarcely necessary to state that the use of iron scale for hardening mortar and making it artificially hydraulic is familiar to engineers, architects and builders in Glasgow and its neighborhood; but in many other parts of the country that process appears to be less known than it deserves. The principal constituents of the iron scale are probably silica and protoxide of iron; but its action upon lime, and the nature of the artificial cement which it forms, have not hitherto, so far as I know, been investigated by chemists. Considering the benefits that have arisen from the chemical analysis of other cementing materials, it is much to be wished that some chemists should undertake the examination of this material also.

Cast-Iron Curb. — Lightning Conductor. — On the top of the chimney is a pitch-coated cast-iron curb, one inch thick, coming down three inches on the outside and inside. The lightning conductor is a copper wire rope three-fourths inch in diameter. It terminates in a covered drain, in which there is always a sufficient run of water.

Scaffolding.—In the construction of the internal scaffolding care was taken that the needles or horizontal beams should be supported wholly by the brickwork, and not by the upright posts, for great danger has been known to arise from the brickwork coming to bear upon the ends of the needles, and through them, on the posts, owing to the settlement of the lower part of the chimney.

Precautions against too Rapid Building. — In order that the concrete foundation might have time to harden before being subjected to a heavy load, it was made by the Iron Company themselves before the contract for the chimney was let; for it is known that intense pressure tends to retard the hardening of concrete. The progress of the building was restricted by the specification to a rate not exceeding six feet of vertical height per day.

Contract and Execution.—Tenders were taken from a limited number of builders in the North of England and in Scotland, and the lowest offer was accepted, being that of Messrs. William Wilson and Son, of Glasgow. The work was executed by that firm in a manner that left nothing to be desired.

Cost.—The following were the amounts of the estimated and actual cost respectively: — Engineer's approximate estimate, £1,672; actual cost including designing and superintendence, £1,560; being at the rate of almost exactly 4*d.* per cubic foot of the whole space occupied by the building, which is 94,000 cubic feet nearly.

Present Temperature and Draught.—According to the last account, the temperature inside the chimney when doing about three-fourths of its full duty is 490° Fahrenheit, and the pressure of the draught is one and seven-eighths inches of water, which agrees to a very small fraction with the pressure as deduced theoretically from the temperature and the height of the chimney.

Comparison with some other Chimneys. — The dimensions and stability of the chimney which has just been described are nearly the same with those of the second highest chimney at St. Rollox Chemical Works, built about ten years previously, except that in the older chimney the joint of least stability is one hundred feet above the ground. In the great St. Rollox chimney, four hundred and fifty-five and one-half feet high from foundation to top, the greatest pressure of wind which can safely be borne is almost exactly the same, viz., fifty-five pounds per square foot of a plane surface, or about twenty-seven and one-half pounds per square foot of the plane projection of a cylindrical surface. The bed-joint of least stability is two hundred and ten feet above ground. In the great Port Dundas chimney, four hundred and sixty-eight feet high from foundation to top, the bed-joint of least stability is two hundred feet above the ground, and the greatest safe pressure or wind is sixty-seven pounds per square foot of a plane surface, or thirty-three and one-half pounds per square foot of the plane projection of a cylindrical surface; so that here it may be considered that there is an excess of stability.

CHIMNEY-SHAFT AT WOOLWICH ARSENAL.

	ft.	in.
Concrete foundation.		
Height from foundation to top	239	9
" ground "	223	9

Base above ground line 20 feet square.

The plinth and cornice stand twenty-seven feet high, above which the octagonal shaft commences.

	ft.	in.		ft.	in.	
Shaft	16	9	diameter at bottom by	2	7½	walls
"	6	6	" top "	0	9	"

The brickwork is reduced four and one-half inches at every thirty-one feet, six inches, the topmost length being twenty-six feet.

It is all built in mortar, except the top nine feet, which is bell-mouthed, and built in cement, and is finished with a Portland stone cap and blocking, weighing about seventeen tons.

Time occupied in building from laying the first brick to the laying the last stone at top was nineteen weeks.

MESSRS. GOSLING'S NORTHFLEET SHAFT.

	ft.	in.
Height from foundations to top	227	0
" " ground "	220	0
Outside diameter at base	30	0
" " ground line	22	0
Inside " "	14	6
Outside " top	11	0

Inside diameter at top nine feet six inches, diameter reduced at four feet seven and one-half inches from top to eight feet, nine inches.

The rate of progress in building was under fifteen feet, or two feet six inches per working day.

Principal part of the bricks were Rutter's paviors, or best picked stocks.

The best Dorking gray stone lime, with the best Thames sand, every few courses being grouted in with Portland cement.

Part of this shaft fell in October, 1873, and was rebuilt and finished by August, 1874. Special precautions were taken in rebuilding that all bricks should be wetted before being laid.

WROUGHT-IRON CHIMNEY, MESSRS. SCHNEIDER AND COMPANY, CREUSOT WORKS.

	ft.	in
Height	197	0
Diameter at top	4	3
" " of carved base	6	7

Diameter ten feet, increased at bottom by a carved base.

Weight, forty tons.

The thickness of the sheet-iron is three thirty-seconds of an inch at the top, and seven-sixteenths of an inch at the bottom.

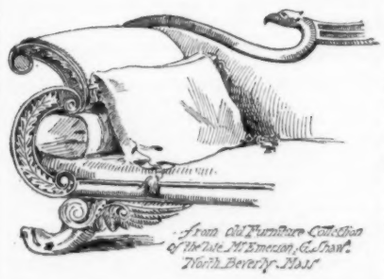
It has an inside ladder — was riveted together horizontally, and lifted afterwards with a crane.

WROUGHT-IRON CHIMNEY, PITTSBURGH.

	ft.	in.
Height	196	0
Diameter	6	7

This was riveted together horizontally and then lifted to the perpendicular by a crane.

FIXING THE BLOWING SANDS ON THE LANDES OF GASCONY.



WHEN we think of the aspect of the Landes of the south of France, our mind sways between two images, one, the aspect of the Landes a hundred years ago, when they were a mere barren waste of shifting sand, that was daily invading the cultivated land in the interior, and the other, their present wooded appearance.

It was M. Bremontier, an able officer of the French Administration of Forests, who, in 1789, devised the means by which these barren, shifting sands have been fixed and converted into their present form of profitable forest. Their previous condition, as described by him, and quoted by Loudon, consisted of drifting sands, which covered three hundred square miles. The surface of this immense tract was like a sea, which, when agitated to fury by a tempest, had been suddenly fixed and changed to sand. It offered nothing to the eye but a monotonous repetition of white wavy mountains, perfectly destitute of vegetation; a multitude of round tops, some of them scooped out so as to resemble craters or semicircular mounds. In times of violent storms of wind the surface of these downs was entirely changed, what were hills of sand often becoming valleys, and the contrary. It was on these occasions that the sand was carried up into the interior of the country, covering cultivated fields, villages, and even entire forests. This used to take place so gradually (by the sand sweeping along the surface and thus raising it, or falling from the air in a shower of particles, so fine as to be scarcely perceptible), that nothing was destroyed. The sand gradually rose among the crops, as if they were inundated with water, and the herbage and tops of the trees appeared quite green and healthy, even to the moment of their being overwhelmed with the sand, which was so very fine as to resemble that often used for hour-glasses. Madame Michelet, in her work, "*Nature: or the Poetry of the Earth and Sea*," incidentally shows that its character, in this respect, remains unchanged. She says: "The sun was already high in the heavens. Feeling somewhat fatigued, I flung myself back upon a sand-hill; nor could there be a softer bed. The sand was so fine, so mobile, that though the wind was light, it fell about me like an impalpable dust. But soon my dress was full of it, and even my hand was covered. This set me dreaming. Wherefore, oh charming Nature, do'st thou wish to

bury me? I feel myself already oppressed with the weight of this sifted sand, which thou throwest at me playfully; yet, at the same time, it seems as if it would re-awaken me to life, whether it comes from the warm sea, still impregnated with marine odors, or whether it descends from the dune, all balmy with the pollen of flowers." And she thus graphically describes the Landes from another point of view: "The moving rampart of sand, forty leagues in length, notwithstanding its mobility, seems inexorable. Not the smallest harbor exists. The great waves coming from America beat against the outline of the desolate shores. If they accumulate sand and *débris*, they do not mould them in opposition to, or in accordance with the dunes, like the ocean and the Gironde. The rivers which flow from the interior have gradually been constrained to yield to the dykes thrown across their channels. They flow parallel to the sea, in a southerly direction, so as to pour into it obliquely their dwindling waters." This is the scene as one sees it now. The river is fenced from the sea by a long bank of sand, now bearing the trees planted by Bremontier. It is an old story how he did so. The difficulty of fixing shifting sands is no new problem, and various have been the means resorted to. But none have succeeded so well as Bremontier's. He sowed on the surface of the sand, seeds of the common broom, mixed with those of pinus pinaster, or cluster pine (var. *maritima*), one of the few pines that thrive in sandy soil. He commenced on the side next the sea, or on that from which the prevailing wind blew, and sowed in narrow strips at right angles to the wind. The first strip was protected by a line of hurdles; it, in its turn, protected the second, the second the third, and so on, until the whole breadth of the downs in the locality with which he was dealing was covered with plantation. His success was complete — the barren waste of sand is now clothed with the fragrant pine. Charming open sandy spots invite the traveller to pause and take shelter from the rays of the hot sun under the thick foliage of its giant boughs. A flora of its own has supplanted the previous lifeless desolation — a flora meagre, but exquisite and rich in pungent and penetrating perfumes; vervain, mint, bindweed, marjolaine and broom are scattered around. A fauna, too, has followed in its train; crowds of insects that prey upon the pine have swarmed after it, and their hum adds to the rural charm of the scene. Everything breathes of solitude and repose; Nature herself seems asleep, but not dead. Before Bremontier, on such a day and such an hour, she might, indeed, have seemed dead; but now life is all around; man himself breaks the charm of apparent lethargy: the sound of the woodman's axe breaks upon the silence; the blue vapor of the charcoal-burner's heap ascends into the sky, and assails the nostrils. Thanks to Bremontier, man has found here, too, something for his hand to do; women and children have followed in his train, and the blowing, shifting, restless sands now yield subsistence to an industrious, though scanty population.—*M., in Woods and Forests.*

NOTES AND CLIPPINGS.

The Bower-Barff Process for Protecting Iron. — The *Engineering and Mining Journal* says that the exact extent of the value of this process remains to be proved by fuller experience, but that it may be considered as fully proved that it efficiently protects iron surfaces against ordinary atmospheric influences and a large number of weak acids and acid fumes. At a meeting of mechanical engineers in America, a Mr. Towne stated that the process did not answer on boats where exposed to salt water, which very soon attacked the metal in spite of the coating; and that when once the coating was broken through the corrosion of the metal was more rapid than on iron which had not been coated. Concerning this, the above-named journal remarks that the magnetic oxide coating *does* stand salt water perfectly, and suggests that the cases observed by Mr. Towne are due to the mechanical abrasion of the coating, owing to its being exposed to wearing. The coating stands better than paint or zinc, but of course can be broken away. As regards the assertion that once broken through, the presence of the coating causes increased corrosion, the *Journal* remarks that it can see no reason why this should be so. It is generally stated, that such increased corrosion is the case where a zinc coating is broken through, and that this is due to galvanic action. This may be also the case with the Bower-Barff coating. But more investigation is needed on this point.

Reverse Blue Prints. — The French process, brought forward by M. Pellet, for the photographic reproduction in blue lines on white paper of industrial drawings, plans, maps, etc., is thought to have some special advantages. It is based on the property of perchloride of iron being reducible to protochloride by light, the latter salt not being changed by a solution of prussiate of potash, while the former is immediately colored blue. The copying paper is sensitized by immersion in a bath formed of one hundred of water and ten of perchloride of iron, and five of oxalic acid, or other vegetable acid. The drawing, on transparent paper, is placed on a dry sheet of the copying paper, and exposed to the light under glass, that is, fifteen to thirty seconds to the sun in summer, forty to seventy seconds in winter, and in the shade, the exposure varying from two to forty seconds, according to weather. After exposure, the sheet is placed in a bath of prussiate of potash, fifteen to eighteen per cent of water, which immediately colors blue all the parts where the perchloride has remained intact, but does not affect the parts where the salt has been reduced by the light. Then the drawing is washed with water, and passed into an eight to ten per cent bath of hydrochloric acid, which removes the salt of protoxide of iron, when it is washed again and dried. The drawing now appears in deep blue tints on a very white ground, its appearance being that of a drawing made by hand with blue ink. — *Providence Journal.*

Copenhagen. — If any one expects to find the capital of Denmark a bright, gay city, with white marble palaces, magnificent residences, dazzling shops, lively streets, grand trees, imposing public buildings, stately churches, wide boulevards, sparkling with wealth and beauty, he is doomed to disappointment. Instead, he finds a commonplace city, with an excellent, though not picturesque harbor, a pleasant artificial lake in the centre of the town, and a park in the outskirts. Architecturally, Copenhagen is unimposing, dreary and dilapidated. The public buildings, with the exception of Christianborg Palace (recently destroyed by fire) are unattractive. There is an unfinished church, standing in the centre of the city, with an imposing dome, but it has stood unfinished so long that a stranger is in doubt whether it is a ruin or a building in progress of erection. The Thorwaldsen's Museum, remarkable in its collection of the works of this great modern sculptor, has the appearance of an old theatre turned inside out. The four wretched old palaces which now contain the representative of a monarchy that has celebrated the thousandth anniversary of its foundation, look with a musty, ancient, vacant stare into the most desolate cobblestone square that it is possible to picture. The yellowish-gray walls of the old buildings are peeling away; not a green leaf or blade of grass has the courage to grow within range of the front of these so-called palaces; nothing but crumbled stone, dirty white shutters, cobblestones, and a bronze statue of Frederick the something, greet the king's eye should he gaze from any of the front windows of his apartments upon the streets below. In the meantime the "good and faithful Parliament" calmly refuses to appropriate the money necessary to rebuild the Christianborg Palace. The City Exchange of Copenhagen is of red brick and sprawls over considerable ground, having the appearance of a block of Gothic cottages. The hotels and restaurants are uniformly bad. The Hotel d'Angleterre is considered the best. It is badly kept. The plaster in the bedrooms is cracked and falling off, the wall-paper mildewed with dampness and black and greasy with age and use. The sanitary arrangements are simply abominable and enough to breed infectious disease. It is difficult if not impossible to obtain a good dinner in the city. The fare at the best restaurant is poor. Copenhagen is badly drained, or rather not drained at all. —*Philadelphia Press.*

The Washington Monument and the Lightning Stroke of June 5. — The recent injury to the Washington Monument by lightning has attracted attention throughout the country to such a degree that a short statement of the facts in the case will doubtless be of interest to the readers of *Science*. On the afternoon of June 5, a thunder-storm of no unusual character passed over Washington. At about fifteen minutes past three there was a single burst of thunder of some violence, which was about the only notable electrical disturbance of the afternoon. Although it had successfully passed through disturbances apparently much more violent on one or two previous occasions, this time the monument was "struck" and some damage done to one of the stones near the apex. Two men who were inside of the structure at the base described the sound produced as resembling the simultaneous discharge of a great number of cannon, and declared that the "whole monument trembled." Two others were in a small wooden building, used as an office, near by. One of them was looking out of the window, away from the monument, toward the north. He affirms in the most positive manner that he saw a ball of fire, which he says was as large as his fist, coming directly toward the window out of which he was looking. Both he and his companion (who was not looking out of the window, and who did not see the ball of fire) seem to have felt something of the usual effect of a shock. Those who were within the monument say they felt no unusual sensations except those produced by the noise. When the monument was examined from the ground with the unaided eye, no injury could be detected. On applying a good telescope, however, it was seen that one of the stones just below the capstone was split from top to bottom, the crack produced being about four feet long, and it was open to the extent of about two inches. A small corner of the lower corresponding angle of the capstone had also been carried away, this doubtless resulting from the opening of the crack in the stone upon which it rested. Col. T. L. Casey, U. S. A., the engineer in charge of the construction of the monument, requested Professors Rowland, of Baltimore, Newcomb, of the United States Navy, and Mendenhall, of the Signal Service, to examine the monument, and recommend such additions to the present arrangements for protection from lightning as would seem to them necessary and sufficient. It was ascertained on examination that, with the exception of that referred to above, the monument showed no evidence whatever of having received the stroke. A careful examination of the tip of the aluminum apex has not yet been made; but it seems likely that it will be found to be somewhat blunted by fusion, as is often the case even where no other effect of the stroke is to be seen. The aluminum pyramid is secured to the capstone by a heavy copper bolt one-and-a-half inches in diameter. From the end of this four copper rods, each three-quarters of an inch in diameter, are carried to the extremities of four heavy iron columns extending to the base of the monument, inside of which the elevator runs. As originally put in, these rods are bent out towards the four corners of the pyramid near which they run on their way to these iron columns. Just where one of these is nearest to the angle of the pyramid, and hence nearest to the outside of the structure, the rupture occurred; and to this must doubtless be attributed the localization of the stroke. The damage done to the monument is in reality very small, and can easily be repaired; but the accident is exceeding instructive to those interested in lightning protection. The conducting power of the interior seems to be ample for any discharge which could possibly occur, and no evidence appears of any weakness in this respect; but it is evident that the aluminum apex alone does not possess sufficient collective or distributing power, and the improvements suggested by the Committee will doubtless be in the direction of increasing that power by the addition of more metal. — *Science.*

BUILDING INTELLIGENCE.

(Reported for The American Architect and Building News.)

[Although a large portion of the building intelligence is provided by their regular correspondents, the editors greatly desire to receive voluntary information, especially from the smaller and outlying towns.]

BUILDING PATENTS.

[Printed specifications of any patents here mentioned, together with full detail illustrations, may be obtained of the Commissioner of Patents, at Washington, for twenty-five cents.]

321,936. COMBINED SCREEN AND STORM DOOR. — Charles Anderson, Downer's Grove, Ill.

321,939. SELF-SUPPORTING STRUCTURE. — Daniel Bates, Coldwater, Mich.

321,949. DOOR-SPRING.—Arthur Carrier, Bay City, Mich.

321,964. COMBINED DOOR-CHECK AND BUFFER. — Carrie G. Griffin, Manhattan, Kans.

321,973. SEWER-GAS VALVE. — Frank G. Johnson, New York, N. Y.

321,974. SEWER-GAS CUT-OFF FOR BASINS.—Frank G. Johnson, New York, N. Y.

321,994. SASH-BALANCE.—William S. Michael and David W. Geib, Lancaster, Pa.

321,995. VISE.—Peter Minea, St. Paul, Minn.

322,006. CONCRETE-MIXING MACHINE. — Ernest L. Ransome, San Francisco, Cal.

322,016. VARNISH.—Henry T. Smith, Cooke County, Tex.

322,037. DEVICE FOR HANGING DOORS.—Francis B. Boalt, Binghamton, N. Y.

322,047. TRIMMER-ARCH. — William S. Eames, St. Louis, Mo.

322,049. METHOD OF MANUFACTURING GIRDERS.—Albert H. Emery, Stamford, Conn.

322,050. MANUFACTURE OF METALLIC COLUMNS.—Albert H. Emery, Stamford, Conn.

322,078. CISTERN AND FLUSHING APPARATUS FOR WATER-CLOSETS. — William Strong, Indianapolis, Ind.

322,086. THRESHOLD. — Daniel Bartholomew, Red Cloud, Neb.

322,101. WATER-CLOSET. — James L. Howard and Charles P. Howard, Hartford, Conn.

322,107. HOT-AIR FURNACE. — Miron H. Jacobs, Syracuse, N. Y.

322,114. SELF-CLOSING FAUCET.—Henry B. Leach, Boston, Mass.

322,153. FELT ROOFING.—Lewis F. Blair and John W. Roche, Oswego, N. Y.

322,168. LAMP FOR ILLUMINATING, HEATING AND VENTILATING ROOMS. — Benjamin F. Enoch, Bergen Point, N. J.

322,178. PNEUMATIC DISPATCH AND SPEAKING-TUBE SYSTEM.—Richard J. P. Goodwin, Manchester, N. H.

322,182. SASH-HOLDER.—William D. Isett, Altoona, Pa.

322,206. FIRE-ESCAPE.—Isaac S. Smeltzer, Columbus, O.

322,211. DOOR-BOLT.—John F. Taylor, West Park, N. Y.

322,218. HYDRAULIC DOOR-CHECK. — Leo Wadack and Alois Graffy, Berlin, Germany.

322,222. CLAMP FOR EAVES-TROUGH. — George D. Waters, Cedarvale, Kans.

322,235. APPARATUS FOR THE MANUFACTURE OF WHITE LEAD.—William V. Wilson, London, Eng.

322,239. HINGE. — Frank W. Beckwith, Detroit, Mich.

322,256. WRENCH. — Thos. J. Campbell, Westfield, Mass.

322,280. FIRE-PROOFING COMPOUND. — John T. Greenwood, Jr., Beloit, Wis.

322,304. SPOKESHAVE AND CHAMFER-CUTTER. — James Mander, Philadelphia, Pa.

322,307. PLASTIC COMPOUND FOR WALLS, ETC. — Henry W. Merritt, Boston, Mass.

322,328. WINDOW-GRATING. — John W. Showalter and George W. Mauger, Pottstown, Pa.

322,369. FLOOR-CLAMP.—Jacob M. Groce, Ravenswood, W. Va.

322,377. VENTILATING-CAP.—John A. Hughes and Charles S. Mengel, Philadelphia, Pa.

322,388. WATER-CLOSET SUPPLY-VALVE. — Henry S. Lord, Hartford, Conn.

SUMMARY OF THE WEEK.

Baltimore.

BUILDING PERMITS. — Since our last report nineteen permits have been granted, the more important of which are the following:

Geo. E. Bay, 20 three-st'y brick buildings, e s Argyle Ave., bet. Biddle and Greenwillow Sts.

N. Wolfman, 2 three-st'y brick buildings, com. s e cor. Jefferson and Chapel Sts.

M. Kaufman, three-st'y brick building, e s Broadway, n of Madison St.

Corpus Christi Church, stone church, s w cor. Mt Royal Ave. and Townsend St.

M. Holler, 2 two-st'y brick buildings, s w cor. Monument and Luzerne Sts.

H. W. Keck, 3 two-st'y brick buildings (square), e s Binney St., bet. Dillon and Hudson Sts.

F. O. Singer, 8 two-st'y brick buildings, n s Mosher St., com. n w cor. Carey St.; and 3 two-st'y brick buildings, w s Carey St., n of Mosher St.

Jacob Saum, 9 two-st'y brick buildings, w s Gilmor St., s w cor. Cole St.; and 5 two-st'y brick buildings, s s Cole St., w of Gilmor St.

M. J. Dorsey, 2 two-st'y brick buildings, e s Dexter St., bet. Stockholm and Cross Sts.

Brooklyn.

BUILDING PERMITS. — *Warren St.*, river front, six-st'y brick warehouse, gravel roof; cost, $35,000; owner, Jeremiah P. Robinson.

Jefferson St., s s, 55′ w Throop Ave., two-st'y and mansard dwell., tin roof, wooden cornice; cost, $7,000; owner, — McBride, Ninth St., near South Second St.; architect, E. F. Gaylor; builders, S. J. Burrows and Marinus & Gill.

First St., s w cor. North Eighth St., three-st'y brick factory, tin roof; cost, $11,000; owner, Eugene Doherty, North Ninth St., cor. Second St.; architect, T. F. Houghton; builders, J. Rooney and J. Fallon.

Greene St., Nos. 243 *and* 245, 3 three-st'y frame tenements, gravel roofs; cost, each, $3,000; owner, Henry C. Fisher, 119 Norman Ave.; architect and contractor, C. Dunkhase; mason, Wm. Fischer.

South Fifth St., s w cor. Third St., 2 brick buildings for stable and shop, tin roof; cost, $2,000 and $3,500; owner and builder, Bernard Gallagher, 122 Union Ave.; architect, E. F. Gaylor.

Union Ave., s e cor. Meserole St., four-st'y brick store and tenement, tin roof; cost, $10,500; owner, L. Marquardt, on premises; architect, Th. Engelhardt; builders, J. Auer and J. Bossert.

Broadway, s s, 25′ s Ellery St., 2 three-st'y frame store and dwells., tin roofs; cost, each, $6,000; owner, Mrs. Skillman; builders, J. Rueger and B. Guenscher.

Ormond Pl., e s, 100′ s Jefferson St., three-st'y brick dwell., tin roof; cost, $9,000; owner, W. B. Smith, 107 Schermerhorn St.; architect, C. Werner; builders, O. Nolan and J. Rome.

Bushwick Ave., s w cor. Schaeffer St., two-st'y frame (brick-filled) dwell., tin roof; cost, $4,500; owner, John W. Crawford, 145 Woodbine St., builder, J. E. Sager.

South Ninth St., No. 238, three-st'y brown-stone dwell., tin roof, iron cornice; cost, $11,000; owner, Robert Thomas, 244 South Ninth St.; builder, T. Gibbons.

Eighth Ave., w s, 40′ s Berkeley Pl., 3 three-st'y and attic brown-stone dwells., tin roofs; cost, each, $12,000; owner and builder, William Gubbins, 20 Seventh Ave.; architect, C. Werner.

Marion St., s s, 2 0′ w Ralph Ave., three-st'y frame (brick-filled) dwell., tin roof; cost, $3,700; owner, Frederick Goebel; architect, A. Hill; builders, Weekes & Lauer.

North Ninth St., n w cor. Sixth St., three-st'y brick factory, gravel roof; cost, $3,200; owners, Longman & Martinez, 207 Pearl St., New York; architects, J. H. Doremus and Chas. Good.

Maujer St., s s, 87′ e Bushwick Ave., three-st'y Belleville stone dwell., slate roof; cost, $40,000; owners, Nuns of St. Dominic, Montrose and Graham Aves.; architect, W. Schickel; builders, W. & T. Lamb, Jr.

Prospect Ave., s s, 175′ e Seventh Ave., 2 three-st'y frame tenements, tin roofs; cost, $4,400; owner and mason, H. B. Lyons; contractor, not selected; architect, W. M. Coots.

Butler St., s s, 122′ w Rogers Ave., two-st'y brick dwell., tin roof; cost, $3,500; owner, C. O. Sabine, 305 Hicks St.; architects, Klieg & Rocher; builders, W. & E. H. Hawkins and T. Walley.

Garfield Pl., n s, 95′ 9″ w Fifth Ave., 5 two-st'y brick dwells., gravel roofs; cost, each, $3,000; owner, R. Brown, 34 South Portland Ave.; builder, L. E. Brown.

Devoe St., n s, 212′ 10″ e Bushwick Ave., three-st'y frame (brick-filled) tenement, tin roof; cost, $3,800; owner, Leopold Fritz, on premises; architect, G. Hillenbrand; builders, A. Annan and C. Buchheit.

Stockton St., No. 187, three st'y frame tenement, tin roof; cost, $4,000; owner and builder, Andrew Wills, 137 Stockton St.; architect, H. Vollweiler.

Brooklyn Ave., w s, 25′ n Herkimer St., three-st'y brick stable, tin or gravel roof; cost, $12,000; owners, architects and builders, Ashfield & Son, 631 St. Marks Ave.

ALTERATIONS. — *Vanderbilt Ave.*, n w cor. Park Pl., one-st'y brick extension, tin roof, bay-window; cost, $3,000; owner, John Hanscom, Vanderbilt Ave., cor. Park Pl.; architect, M. J. Morrill; builders, P. Carlin & Sons and J. S. McKea.

Court St., No. 58, four-st'y brick extension, tin roof; cost, $4,000; owner, Joseph Huhn, 138 Livingston St.; architect, C. F. Eisenach; builders, J. J. Bentzen and C. Dietrich.

Fulton St., No. 425, new cellar, also walls, etc.; cost, $4,000; owner, S. B. Duryea, 46 Remsen St.; architect, M. J. Morrill; builders, J. Stevenson & Son and A. Williamson.

Bushwick Ave., Maujer and Ten Eyck Sts., one-st'y brick extension, slate roof; cost, $5,000; owners, Nuns of St. Dominic, on premises; architect, Wm. Schickel, builders, W. & T. Lamb, Jr.

Furman St., Nos. 147 *and* 149, add one st'y, rebuild front and repair party-walls; cost, $10,000; owner, Gordon L. Ford, 97 Clark St., and Lorin Palmer, 142 Columbia Heights; architect, C. F. Eisenach; builders, T. Doulon and W. S. Wright.

Hicks St., n w cor. Joralemon St., add 3′ peak slate roof, new pediments, new terra-cotta sills, lintels, etc., stoop shifted to Hicks St. front; cost, $6,000; owner, Mrs. Packer, Grace Ct.; architect, Parfitt Bros.; builder, J. A. De Camp.

Prospect Pl., Nos. 119 *and* 121, add one st'y to each house; cost, $4,000; owner, James Chambers, architect and builder, T. K. Schermerhorn,

Chicago.

BUILDING PERMITS. — M. Gutrich, three-st'y store and dwell., 3232 Wentworth Ave.; cost, $5,000; architect, J. Frank.

Mrs. A. R. Blair, two-st'y dwell., 166 Rush St.; cost, $12,000; architects, Cobb & Frost.

P. A. O'Neill, remodel building, 92 Van Buren St.; cost, $17,000; architect, Halb rg.

S. Meaney, three-st'y flats, 99 Sigel St.; cost, $3,000.

F. J. Loesch, two-st'y dwell., 46 Lincoln Pl.; cost, $4,500.

F. W. Maurer, three-st'y store and flats, 755 West Twelfth St.; cost, $7,000.

J. Gunderman, three-st'y store and dwell., 182 North Ave.; cost, $7,000.

C. T. Bullock, three-st'y store and dwell., Van Buren St.; cost, $8,000.

J. Engburg, two-st'y dwell., 563 Hulbert St.; cost, $4,500; architect, J. Otter.

C. Linke, two-st'y dwell., 86 Jay St.; cost, $2,500.

G. Harding, basement, 11 Clarkson St.; cost, $3,000.

J. Buehler & Co., 5 two-st'y stores and flats, 1103–1115 Milwaukee Ave.; cost, $18,000; architect, H. Kley.

J. Buehler & Co., one-st'y rink, rear 1103–1115 Milwaukee Ave.; cost, $10,000.

J. Parker, Jr., three-st'y flats, 522 Monroe St.; cost, $9,000; architect, J. Huber.

C. Junge, three-st'y store and flats, 926–928 Milwaukee Ave.; cost, $15,000; architect, H. Sierks.

M. C. Dillon, two-st'y dwell., 750 Warren Ave.; cost, $2,500.

Mrs. C. O'Brien, two-st'y dwell., 39 Pierson St.; cost, $4,500.

A. Blather, two-st'y dwell., 92 Nineteenth St.; cost, $4,000.

F. Norman, two-st'y dwell., 140 Clybourne Ave.; cost, $4,000.

O. O. Ostrom, 8 two-st'y dwells., 295–311 Schiller St.; cost, $50,000.

Stolzenfeld & Schacker, 2 two-st'y flats, 356–358 Henry St.; cost, $5,000.

F. A. Nixon, two-st'y dwell., 97 Thirty-seventh St.; cost, $6,500.

C. R. Lott, two-st'y dwell., 465 Congress St.; cost, $3,500.

G. B. Carter, two-st'y dwell., 3321 Vernon Ave.; cost, $8,000.

Mrs. C. Lunden, four-st'y store and flats, 123 Chicago Ave.; cost, $8,000.

M. Brand & Co., one additional story, 256–262 Blue Island Ave.; cost, $15,000; architect, C. H. Gettig.

J. Gardner, two-st'y dwell., 725–727 Superior St.; cost, $5,500.

E. Webber, two-st'y dwell., 164 Ambrose St.; cost, $2,500.

J. Clark, six-st'y office-building, Sherman St.; cost, $150,000.

J. C. Armbruster, two-st'y store and dwell., 625 Twelfth St.; cost, $4,000.

Mrs. M. Richardson, two-st'y dwell., 3015 Lock St.; cost, $3,000.

C. Muehlke, 2 two-st'y dwells., 297–299 State St.; cost, $14,000.

H. Ganske, two-st'y store and dwell., 829 Twenty-first St.; cost, $4,500.

C. Kind, two-st'y store and dwell., 1100 Leavitt St.; cost, $4,000.

Cincinnati.

BUILDING PERMITS — H. Brochman, four-st'y building, Elm and Liberty Sts.; cost, $3,000.

Jno. Sperry & Co., three-st'y building, Main and Ninth Sts.; cost, $7,500.

A. Hample, two-and-one-half-st'y building, Richmond and Freeman Sts.; cost, $3,000.

Hoeple & Co., two-st'y building, McMillan and Madison Sts.; cost, $8,300.

Thos. Owens, two-st'y building, Gilman St.; cost, $8,500.

C. Doer, four-st'y building, Vine and Canal Sts.; cost, $9,000.

David Sinton, remodel Grand Opera-House; cost, $5,000.

H. Cook, two-st'y building, Harrison Pike; cost, $4,000.

J. B. Foraker, Cross Lane and Elm St.; cost, $7,000.

A. Torrence, two-st'y building, Bignall and Carmel Sts.; cost, $2,500.

Wm. H. Stewart Sons, five-st'y building, Sixth and Sycamore Sts.; cost, $6,500.

Wm. H. Stewart Sons, two-st'y building, Biglow St.; cost, $6,200.

A. Aukenbauer, two-st'y building, Blue Rock and Cherry Sts.; cost, $2,000.

Fred. Otte, four-st'y building, Race and Fifteenth Sts.; cost, $7,000.

Marcus & Wessel, two-st'y building, Colrain Pike and State St.; cost, $2,500.

G. & A. Stiebel, 3 two-st'y buildings, Spring Grove Ave. and Queen City; cost, $6,600.

J. J. Holekamp, three-and-one-half-st'y building, Baymiller and Clinton Sts.; cost, $3,000.

Audlebrinker & Treking, three-st'y building, Elm and Findlay Sts.; cost, $5,000.

Wm. H. Stewart Sons, three-st'y building, Biglow Ave.; cost, $6,000.

H. Rummelbaum, three-st'y building, Main and Liberty Sts.; cost, $2,100.

C. Grobrecht, three-st'y building, Camp Washington; cost, $5,000.

Mrs. M. L. Dibble, two-st'y building, Pardrome St.; cost, $2,000.

L. Marchs, five-st'y building, Third and Main Sts.; cost, $4,000.

J. H. Gressman, two-and-one-half-st'y building, Brown and Marshall Sts.; cost, $2,000.

J. M. Glenn, remodel, Broadway and Third St.; cost, $2,000.

L. P. Hazen, two-and-one-half-st'y building, Pardrome and Paralax; cost, $3,000.

Gambrinus Stock Co., addition Abigail and Broadway; cost, $8,000.

Wm. Boch, two-st'y building, Wayne and Kelly Sts.; cost, $2,700.

Henry Rothshop, four-st'y building, Fifteenth and Main Sts.; cost, $6,000.

Wm. Soelter, three-and-one-half-st'y building, Dayton and Coleman Sts.; cost, $7,000.

Miss M. Zaone, two-and-one-half-st'y building, Liberty and Spencer Sts.; cost, $6,000.

Aufenbrink & Friedking, four-st'y building, Elm and Fifth St.; cost, $2,000.

G. T. Nieber, remodeling, Race and Eighth Sts.; cost, $17,000.

S. Asmess, three-and-one-half-st'y building, Adams St.; cost, $3,000.

Martin Johnston, three-st'y building, Peters St.; cost, $3,000.

Louis Meyer, two-st'y building, Mulberry and Race Sts.; cost, $2,800.

V. Whetman, 7 two-st'y buildings, Flint and Denman Sts.; cost, $7,000.

Jos. Rawson, six-st'y building, Sixth and Race Sts.; cost, $35,000.

H. Groswein & Sons, two-st'y building, State Ave. and Findlay St.; cost, $4,800.

34 permits; cost, $24,483.

Total cost to date, $1,347,203.

Permits to date, 633.

New York.

BUILDING PERMITS. — *Hester St., No.* 25, five-st'y brick tenement, tin roof; cost, $18,000; owner, Rachel Kurzman, on premises; architect, Chas. Rentz.

West Seventeenth St., No. 317, five-st'y brick tenement, tin roof; cost, $15,000; owner, Chas. J. Day, 23 West Twelfth St.; architects, Babcock & McAvoy.

Reade St., No. 111, five-st'y brick warehouse, tin roof; cost, $17,000; owner, Marie L. Combes, Newtown, N. Y.; architects, Berger & Baylies.

Elizabeth St., Nos. 271 *and* 273, two-st'y brick dwell. with stores, tin roof; cost, $5,000; trustee, Geo. W. Weeks, 128 Hooper St., Brooklyn; architects, Berger & Baylies; builders, G. Staiger and C. Staiger.

West Thirtieth St., Nos. 447 *and* 449, three-st'y brick factory or storage building, tin roof; cost, $12,000; owner, Wm. Wilson, Mt. Vernon, N. Y.; builder, J. J. Kierst.

East Forty-second St., Nos. 228 *and* 230, 2 five-st'y brick tenements, tin roofs; cost, total, $40,000; Joseph and Robert Gordon, Second Ave., s w cor. Thirty-ninth St.; architect, Albert Wagner.

East Fifteenth St., No. 510, four-st'y brick school, tin roof; cost, $14,000; owner, Rev. John Edwards, 503 East Fourteenth St.; architect, L. J. O'Connor.

West Thirty-seventh St., No. 456, five-st'y brick tenement with stores, tin roof; cost, $15,000; owner, James Madden, 500 Eighth Ave.; architect, W. Holman Smith.

West Thirty-eighth St., No. 331, five-st'y brick tenement with stores, tin roof; cost, $17,000; owner, Philip Hofmann, 305 West Thirty-eighth St.; architect, M. L. Ungrich.

East Twelfth St., No. 533, five-st'y brick tenement with stores, tin roof; cost, $12,000; owner, Fritz Heerlein, 932 Second Ave.; architect, Wm. Graul.

First Ave., No. 960, four-st'y brick tenement, tin roof; cost, $7,000; owner, George Whitefield, 140 East Fifty-fifth St.; architects, A. B. Ogden & Son.

East Sixtieth St., Nos. 312 *and* 314, 2 five-st'y brick tenements, tin roofs; cost, each, $17,000; owners, Lichtenstein Bros. & Co., Thirty-eighth St., cor. Second Ave.; architects, Schwarzmann & Buchman.

One Hundred and Fourth St., s s, 113′ e First Ave., two-st'y brick sash and blind factory, with 26-foot extension, tin roof; cost, $15,000; owner, Wilhelmine Juch, 401 East One Hundred and Sixth St.; builder, Wm. A. Juch.

One Hundred and Sixth St., s s, 20′ e Lexington Ave., 3 four-st'y brick tenements, tin roofs; cost, each, $15,000; owner, Thomas F. Cooke, 351 East Eighty-seventh St.; architect, G. A. Schellenger.

One Hundred and Twenty-fourth St., s w cor. Fourth Ave., 4 five st'y brick tenements, tin roofs; cost, total, $100,000; owner, Henry Muhlker, 129 East One Hundred and Fourteenth St.; architect, R. W. Treffenberg.

Third Ave., s w cor. Eighty-fourth St., 4 five-st'y brick (stone front) tenements with stores, tin roofs; cost, each, $20,000; owner, Thomas Smith, 1628 Lexington Ave.; architects, Babcock & McAvoy.

Eighty-fourth St., s s, 93′ 6″ w Third Ave., 6 five-st'y (stone front) tenements, tin roofs; cost, each, $20,000; owner and architect, same as last.

One Hundred and Eighteenth St., s s, foot of and Harlem River, one-st'y brick factory, and one-st'y brick enclosure for gas producers, tin roof; cost, $10,000; owners, R. H. Wolff & Co. (Limited), One Hundred and Eighteenth St. and Harlem River; architects, Schwarzmann & Buchman.

Sixty-first St., n s, 100′ w First Ave., 3 five-st'y brick tenements, tin roofs; cost, each, $14,000; owner, John O'Sullivan, 74 East One Hundred and Twelfth Sts.; architect, A. B. Ogden & Son.

East One Hundred and Third St., No. 202, two-st'y brick stable, tin roof; cost, $4,000; owner, Francis McEntee, 216 East One Hundred and Fifth St.; architect, A. Spence.

Eighty-fourth St., n s, 100′ w Eighth Ave., 4 four-st'y and basement brick (stone front) dwells., tin roofs; cost, each, $18,000; owner, Terence Kiernan, 317 East Eighty-third St.; architect, F. F. Ward; builder, not selected.

Sixth Ave., s w cor. One Hundred and Sixteenth St., 12 four-st'y brick dwells., tin roofs; cost, each, $15,000; owner, Jacob C. Butler, 235 West One Hundred and Twenty-ninth Sts.; architects, Hubert, Pirsson & Co.

One Hundred and Twenty-second St., n s, 375′ w Sixth Ave., 6 three-st'y and attic brick dwells., flat roof, tinned; mansard of brick and terra-cotta; owner, C. W. Goold, 74 East One Hundred and Twenty-seventh St.; architect, F. H. Kimball; builders, J. & W. C. Spears and A. N. Gatchell.

One Hundred and Thirty-fourth St., n s, 100′ w Seventh Ave., 6 three st'y brick dwells., tin and slate roofs; cost, each, $7,000; owner, Margaret Gessner, 1722 Madison Ave.; architect, R. R. Davis.

One Hundred and Forty-sixth St., s s, 200′ e Tenth Ave., 2 four-st'y brick flats, gravel roofs; cost, each, $10,000; owner and builder, John Donnellon, One Hundred and Forty-sixth St., near St. Nicholas Ave.; architect, B. W. Warner.

Tenth Ave., w s, One Hundred and Fiftieth to One Hundred and Fifty-first St., three-st'y brick silk mill, cemented fire proof peaked roof; owners, Joseph Loth & Co., 333 West Twenty-second St.; architect, Hugo Kafka; masons, List & Lennon.

One Hundred and Sixty-third St., abt. 100′ w Ridge Road, one-and-one-half-st'y frame stable and coach-house, tin roof; cost, $3,000; owners, Institution for the Deaf and Dumb, Station M., New York City; architect, Henry Interman; builders, C. R. Terwilliger and James Pettit.

North Third Ave., No. 114, one-st'y brick car-house, felt and gravel roof; cost, $3,500; owners, H. B. M. & F. R. W. Co., Henry Spratley, President, 1033 Boston Ave.; architect, W. W. Gardiner.

Railroad Ave., e s, 75′ n One Hundred and Sixty-ninth St., three-st'y frame tenement, tin roof; cost, $5,000; owner, Frank Litter, Franklin Ave., cor. One Hundred and Sixty-ninth St.; architect and builder, Henry Piering.

Sedgwick Ave., e s, abt. ¼ mile n e Morris Dock Station of N. Y. C. & H. R. R. R., three-st'y brick dwell., slate and tin roofs; cost abt. $22,600; owner, Herman C. Schwab, Highbridge P. O., New York City; architect, Carl Pfeiffer; builders, Frank Lyons and Grissler & Fausel.

ALTERATIONS. — *Fifty-first St.*, s s, abt. 400′ w Sixth Ave., four-st'y brick extension, felt and gravel roof; cost, $40,000; owners, Broadway and Seventh Avenue R. R. Co., Fiftieth and Fifty-first Sts., bet. Sixth and Seventh Aves.; architect, S. D. Hatch.

West Fourth St., No. 299, three-st'y brick extension, tin roof; cost, $5,000; owner, H. B. Meersse, on premises; architect, J. W. Cole; builder, J. Jordan.

Fifth St., No. 533, one-and-two-st'y brick extension, tin roof and internal alterations and repairs; cost, $4,000; lessees, Nat'l Bohemian Soc., Francis Linke, committee, on premises; architects, Berger & Baylies.

East Twentieth St., No. 27, two-st'y brick extension, tin roof, bay window on front, piers removed front and rear, and walls supported on iron girders; cost, $10,000; owner, James Muir, 104 East Sixty-first St.; builders, J. J. Tucker and A. C. Hoe & Co.

West Fourth St., No. 235, four-st'y brick extension, tin roof; cost, $8,500; owner, Jane McKeown, 245 West Fourth St.; architect, E. Gruwe.

West Fifty-fourth St., No. 123, five-st'y brick extension, tin roof; cost, $13,000; owner, Timothy Geohegan, on premises; architect, E. Gruwe.

One Hundred and Seventh St., n s, from Fourth to Lexington Aves., internal alterations, new galleries, etc.; cost, abt. $20,000; owners, New Coliseum Co., One Hundred and Seventh St. and Lexington Ave.; architect, R. N. Anderson.

Lexington Ave., n w cor. One Hundred and Seventieth St., 4 buildings raised two stories; cost, abt. $10,000; owner and architect, same as last.

Philadelphia.

BUILDING PERMITS.—*Franklin St.*, n of Jefferson St., three-st'y dwell., 16′ 6″ x 70′; G. R. Stewart, contractor.

Brunner St., e of Wayne St., 10 three-st'y dwells., 15′ x 38′; W. D. Dounton, contractor.

Franklin St., n of Harrison St., 6 two-st'y dwells., 15′ x 48′; Taylor & Roberts, contractors.

Maud St., n of Twenty-seventh St., 7 two-st'y dwells., 15′ x 39′; J. E. Ridgway, owner.

Warnock St., n of Indiana Ave., 4 two-st'y dwells., 16′ x 42′; B. H. Senderlin, contractor.

Seprica St., cor. Gordon St., 2 two-st'y dwells., 15′ x 20′; J. McNutt, contractor.

Edgmont St., s of Division St., 6 two-st'y dwells., 13′ x 34′; L. J. Wolff, owner.

Twenty-first St., n w cor. Market St., market, 99′ x 137′; R. W. Strode, contractor.

Market St., No. 707, one-st'y addition, 20′ x 30′; R. W. Strode, contractor.

Beach St., No. 957, two-st'y warehouse, 20′ x 45′; Thos. Campbell, owner.

Sansom St., w of Thirty-seventh St., 2 three-st'y dwells., 15′ x 45′; L. W. Goodman, contractor.

Preston St., n of Fairmount Ave., 4 two-st'y dwells., 13′ x 42′; J. F. Winner, owner.

Thirteenth St., s of Market St., four-st'y addition, 60′ x 253′; Jno. Wanamaker, owner.

Watt St., s of Federal St., two-st'y stable, 16′ x 44′; W. Kennedy, contractor.

Gates St., n of Wood St., 2 two-st'y dwells., 20′ x 49′; S. Lyster, contractor.

Tenth St., s w cor. Moore St., two-st'y dwell., 16′ x 40′; T. C. Nesbitt, contractor.

South Eleventh St., No. 1303, two-st'y dwell., 15′ x 43′; C. D. Supple, contractor.

Hanover St., n of Thompson St., three-st'y dwell., 16′ 6″ x 59′; C. G. Harris, contractor.

Rose St., n of Commerce St., 4 two-st'y dwells., 14′ x 30′; T. L. Kelly, owner.

Greenway Ave., w of Sixty-sixth St., 2 two-st'y dwells., 18′ 6″ x 46′; C. H. Tribitt & Co., contractors.

Callowhill St., w of Second St., three-st'y storehouse, 20′ x 57′; S. S. Myers, owner.

Merion St., w of Forty-fifth St., 4 two-st'y dwells., 15′ 4″ x 40′; T. Burroughs, owner.

Union St., w of Front St., 2 three-st'y stores, 18′ x 90′ and 24′ x 140′; Philip Fitzpatrick, owner.

Somersett St., n of Garnett St., 2 two-st'y dwells., 14′ x 30′; Jno. Patton, owner.

School Lane, n e cor. Wayne St., three-st'y dwell., 40′ x 74′; Geo. Hirst, contractor.

Laurel St., No. 152, smoke-house, 16′ x 36′; Wm. Moland & Sons, owners.

Nicetown Lane, w of Twenty-first St., three-st'y dwell., 16′ 4″ x 44′; McLaughlin & McNamara, contractors.

Clearfield St., w of Amber St., 2 two-st'y dwells., 15′ x 42′; J. P. Pyle, owner.

Sixth St., n of Poplar St., three-st'y brick and stone dwell., 20′ x 60′; Hazelhurst & Huckel, architects.

Elm Ave., cor. Forty-ninth St., three-st'y dwell. and stable and carriage-house to correspond; to be built of brick and stone; Hazlehurst & Huckel, architects.

St. Paul, Minn.

BUILDING PERMITS.—Two-st'y block of frame dwells., w s of Orient St., between Mt. Airy and Thirteenth St.; cost, $2,400; owner, G. B. Elwell.

Two-st'y frame addition to dwell., n s of Summit Ave., between Alice and St. Peter Sts.; cost, $3,0 0; owner, T. D. Simonton.

Two-st'y frame dwell., n s of Selby Ave., between Mackubin and Kent St.; cost, $2,500; owner, F. W. Forbes.

Two-st'y brick chemical engine-house, n s of George St., between Robie and Stryker Ave.; cost, $4,000; owner, City of St. Paul.

Two-st'y brick fire engine-house, s s of Randolph St., between Bay and View Sts.; cost, $4,000; owner, City of St. Paul.

Two-st'y brick fire engine-house, s s of Ross St., between Cypress and Earl Sts.; cost, $4,000; owner, City of St. Paul.

Two-st'y brick fire engine-house, n s of Edmund St., between Marion and Rice Sts.; cost, $4,000; owner, City of St. Paul.

Three-st'y brick double dwell., n s of Ramsey St., between Forbes and Pleasant Sts.; cost, $14,000; owners, R. C. Wiley and F. J. Romer.

Four-st'y brick block, stores and offices, n s of Seventh St., between Minnesota and Cedar Sts.; cost, $40,000; owner, McQuillan Estate.

Two-st'y frame dwell., e s of Chatsworth St., between Division and Leslie Sts.; cost, $4,500; owner, J. H. Morong.

Two-st'y brick store and dwell., e s of Greenwood St., between Winnifred and Susan Sts; cost, $2,400; owner, Anton Sheidle.

Two-st'y frame dwell., s s of Ashland Ave., between Mackubin and Kent Sts.; cost, $3,600; owner, A. D. S. Johnston.

St. Louis.

BUILDING PERMITS.—One hundred and forty-two permits have been issued since our last report, thirty-five of which are for unimportant frame houses. Of the rest those worth $2,500 and over are as follows:—

Northern Presbyterian Church, two-st'y brick parsonage; cost, $3,500; architect, J. Beattie; contractor, S. H. Shaffner.

Cornelius Lynch, two-st'y brick dwell.; cost, $4,000; architect, J. Johnston.

A. Cooper, 7 adjacent two-st'y brick dwells.; cost, $17,500; contractor, A. Cooper.

A. Cooper, 3 adjacent two-st'y brick dwells.; cost, $7,500; contractor, same as last.

Francis T. Bryan, three-st'y store; cost, $11,500; contractor, F. W. Loffhagen.

E. F. Wickham, two-st'y dwell.; cost, $10,000; architects, George I. Barnett & Son; contractor, M. Kirkwood.

Mrs. B. C. Hayden, two-st'y dwell.; cost, $2,800; contractor, Wm. Damon.

John E. McFlenney, two-st'y tenement; cost, $3,800; architect, G. W. Pipe; contract sub-let.

Leverett Bell, two-st'y dwell.; cost, $8,000; architects, Eames & Young; contractor, Frank Greene.

H. Lampe, two-st'y dwell.; cost, $4,000; contractor, T. B. Hartmann.

Miss S. Tacey, 2 two-st'y dwells.; cost, each $4,000; contractor, J. W. Barnes.

Wm. Sharpenburg, two-st'y dwell.; cost, $2,500; contractor, B. Koetters.

Mrs. M. Readon, 3 adjacent two-st'y brick dwells., cost, $4,500; contractor, J. W. Kerney.

Penny & Gentles, three-st'y brick business building; cost, $15,000; architect, J. Beattie; contractor, S. Hoffmann.

John Andre, two-st'y double brick store and rooms above; cost, $6,000; architect, A. Beinke; contractor, Wm. Riewe & Son.

Mrs. C. Heine, two-st'y double brick dwell.; cost, $4,500; architect, Pipe; contractor, S. H. Shaffner.

E. Engelhardt, three-st'y brick store and rooms above; cost, $3,250; contractor, B. Eppman.

C. Kern, two-st'y double brick dwell.; cost, $4,000; contractor, H. Sudhoelter.

E. Link, two-st'y double brick dwell.; cost, $9,000; architect, Wm. Whri; contractor, A. Whri.

A. Bevis, 4 adjacent two-st'y dwells.; cost, $12,000; architect, C. K. Ramsey; contract sub-let.

J. W. Dill, two-st'y brick dwell.; cost, $7,000; architect, C. K. Ramsey; contract sub-let.

E. Tonzirk, two-st'y brick dwell.; cost, $2,600; contractor, A. Vosse.

Mrs. Steele, two-st'y brick store and dwell.; cost, $3,500; contractor, P. Brennan.

P. O'Donnell, 2 adjacent two-st'y brick tenements; cost, $3,000; contractor, John O'Malley.

Anheuser Busch Brew. Co., four-st'y brick storage house; cost, $30,000; architects, E. Jungenfeld & Co.; contract sub-let.

Wm. Crouch, two-st'y brick dwell.; cost, $3,300; architect, C. C. Helmers; contractor, Charles Gerhardt.

General Notes.

CANTERBURY, N. H.— The trustees of the Kezar Seminary broke ground June 15 for the laying of the foundation of the main building.

CARROLL COUNTY, MD.—St. Barnabas Church; T. B. Ghequier, architect, Baltimore.

CLEVELAND, O.—Woodland Ave., carriage repository and factory, 39′ x 40′ and 74′ above sidewalk, with basement under whole; cost, $12,000; Harm & Schuster, owners; Theo. Rosenberg, architect.

HARFORD COUNTY, MD. — St. Mary's Church; T. B. Ghequier, architect, Baltimore.

LINCOLN, NEB. — Frame dwell. for S. H. Burnham; cost, $5,000; John Calvin Stevens, architect, Portland, Me.

PROPOSALS.

CEMETERY-WALL.

[**Near East New York, L. I.**]

OFFICE NATIONAL CEMETERIES,
WASHINGTON, D. C., July 2, 1885.

Sealed proposals, in triplicate, with a copy of this advertisement attached to each, will be received at this office **until Wednesday, August 5, 1885,** for construction of stone enclosing wall at the Cypress Hill National Cemetery, near East New York, Long Island, N. Y.

Specifications for the work and blank forms of proposals can be procured, and plans examined on application to quartermaster's office, Greene and Houston Sts., New York, at the cemetery, and at this office.

Proposals should be endorsed "Proposals for Enclosing Wall at Cypress Hills," and addressed to the undersigned. They will be opened at this office at noon on the date above named, when bidders are invited to be present.

The right is reserved to reject any or all bids.

R. N. BATCHELDER,
501 Deputy Q. M. General, U. S. Army

(*Continued on page* xii.)

The American Architect and Building News.

PUBLISHED EVERY SATURDAY BY

The American Architect and Building News Company,

211 TREMONT ST., BOSTON, MASS.

[No change in editorial management.]

Regular edition; $6.00 per year; six months, $3.50
Gelatine edition; $7.00 per year; six months, $4.00
12 Monthly Numbers, $1.75.

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H. M. Carleton, 21 Park Row.

New Advertisements.

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VENETIAN BLIND CO. (Burlington, Vt.), Venetian Blinds. Page 4, Supplement.
COMBINATION GAS-MACHINE CO. (Detroit, Mich.), Gas-Machines. Page ix.

Dissolution of Partnership.

The Copartnership heretofore existing under the name of **JAMES R. OSGOOD & CO.**, is hereby dissolved.

JAMES R. OSGOOD.
EDWARD L. OSGOOD.
BENJAMIN H. TICKNOR.
THOMAS B. TICKNOR.

Boston, July 18, 1885.

Copartnership Notice.

The subscribers have formed a Copartnership under the name of **TICKNOR & COMPANY**, for the purpose of continuing the business of Publishing and Book-selling, heretofore carried on by **JAMES R. OSGOOD & CO.**

BENJAMIN H. TICKNOR.
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Boston, July 18, 1885.

WANTED.

SALESMAN. — A competent energetic salesman of refined taste, with an acquaintance among architects, in a fine manufacturing business; only replies showing full experience, and references considered. Address "Metal Work" this office. 501

WANTED.

SALESMAN. — Wanted, immediately, an experienced salesman for the mantel, grate and tile business. Must be thoroughly posted in the details and general direction of this line, and capable of taking charge of this department in a large retail establishment in one of the best towns in the west. Permanent engagement and good salary to a competent man who can furnish satisfactory references as to character, ability and experience. Address, "Mantels," care this office. tf

WANTED.

ARCHITECTURAL CLERK. — Wanted, a position as architectural clerk, by a young man capable of superintending and laying out work. Address, "Clerk," care *American Architect*, 211 Tremont St., Boston, Mass. tf

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Solid White Crockery Wash-tubs, manufactured under Morahan's patent. The only ones ever made in the world. Do not buy imitations until you see the genuine. Morahan's Patent stamped on every tub. Washboard and soap-cup moulded in every set. Will outlast any house. Call and see them or send for price-list.

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Specialty: City Surveying and Building Construction.

This Cut Shows our Patent Three-bar Chilled Process, used in the manufacture of our **Composite Railings, Gates, etc.** The horizontal, as well as the upright rods, are in one piece, and the molten metal is poured and chilled on to the wrought-iron, making a perfect joint, which is equal to a solid weld. It leaves no crevices for rust or moisture to enter. We have over 100 designs of Railings, Gates, etc., made by this process. Our prices are as low as the same quality of work in cast or wrought-iron, but our Composite Work will out-last either. Specimens can be seen all over the country, but especially on the Elevated Railroad stations and the East River bridge.

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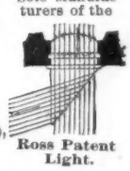

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1885 THE "NOVELTIES" EXHIBITION. 1885

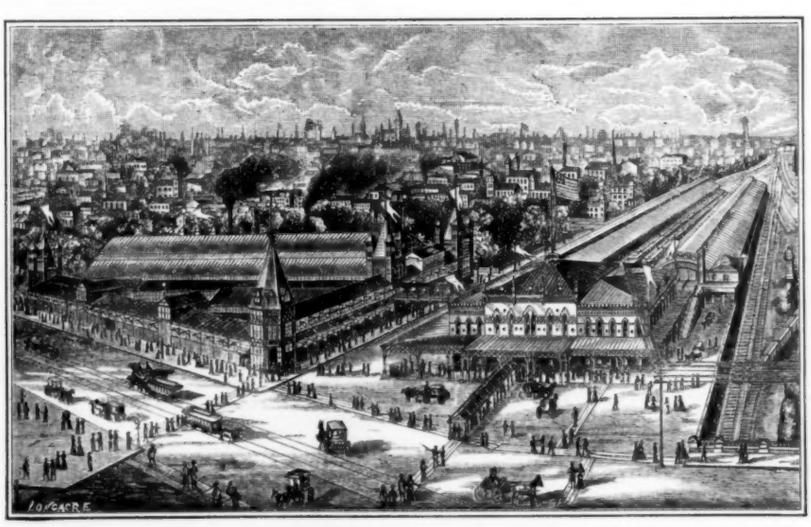
of the

FRANKLIN INSTITUTE, PHILADELPHIA.

OPENS

Tuesday,

September 15.



CLOSES

Saturday,

October 31.

This Exhibition will afford Inventors and Manufacturers an excellent opportunity to bring to public notice their latest and best productions.

For Rules and Regulations, blank forms of applications for space, and all other information, address Committee on Exhibition.

The "Novelties" Exhibition.

1885 of the FRANKLIN INSTITUTE, PHILADELPHIA. 1885

NOVELTY LOCK COMPANY,

CHICAGO, ILL., U. S. A.

Figs. 3, 4 & 5.

Fig 2.

Fig 1

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DOOR KNOB.

The most Simple Lock and Door Knob in existence, and the Strongest.

No more loose knobs and rickety spindles; no binding of the latch-bolt; no wrenching the wrist to turn the knob to open the door; you simply grasp the knob, a slight pressure of the hand will withdraw the latch and open the door.

The knob is as well secured on a thin as on a thick door, which avoids the necessity of using rim locks. The cheap class of goods are as strong and desirable as the more expensive; the spring will not wear out.

These locks are less complicated, have less parts to get out of order. Hence they are smaller and stronger, and cut the stiles of the door less, and are put on with less work.

All of our front door locks are safe and proof against a duplicate key, neither can they be picked from the outside when they are locked on the inside. We use long screws which enter the solid wood above and below the lock-mortise to secure the knob.

Knobs are not screwed on loose, as are all others, but securely bolted, and can never get loose or come off. Have no spindles connecting knobs; they never rattle like the old styles. By using the long escutcheon, we fasten the knobs firmly to the door with two long screws above and one below the lock. They are secured for all time.

This lock has no spiral springs, only one elliptic steel spring being used, and instead of throwing out an extra lock bolt, we lock the latch bolt, thereby greatly simplifying the lock.

Our improved lock can be used on 1 1-8 inch doors (the lock case being only 5-8 inch thick), where they will be as firm and lasting as on 2 inch doors. This is important to contractors.

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Property Owners planning to build, Architects, Contractors and Carpenters, write for new Illustrated Price-List and Sample Knob and Lock on hand-block, or a pair of knobs and lock for use on office or shop door when a trial is desired—complimentary. Address,

NOVELTY LOCK COMPANY,

15 North Clinton St., Chicago, Ill., U. S. A.

1885 Catalogue now out.

PROPOSALS.

WATER-WORKS.

[At Canastota, N. Y.]

Sealed proposals will be received **up to 12 M., of August 4, 1885,** by the Board of Water Commissioners of the Village of Canastota, Madison County, N.Y., for the material and labor necessary in constructing the proposed water-works.

Specifications can be obtained from the Commissioners, and plans and drawings inspected at the office of the Water Commissioners, in the Village of Canastota.

The Board reserve the right to reject any and all bids.

J. H. McMAHON,
F. F. HUBBARD,
F. W. DOOLITTLE,
DECATUR GEE.
Commissioners.

501

PROPOSALS.

STEAM-BOILERS.

[At Leavenworth, Kans.]

THE NATIONAL HOME FOR DISABLED VOLUNTEER SOLDIERS, WESTERN BRANCH, LEAVENWORTH, KANS., July 23, 1885.

Sealed proposals will be received at the Planter's House in this city **until 12 o'clock, noon, August 15th, 1885,** for furnishing delivered on the grounds seven (7) steam-boilers, according to plans and specifications which may be seen at the office of Carr & Grodavent, architects, Leavenworth, on and after July 25.

The right to reject any or all bids is reserved.

GEN. W. B. FRANKLIN, President.
502 E. F. BROWN, Inspector-General.

PROPOSALS.

VAULTS AND SAFES.

[At Washington, D. C.]

OFFICE OF SUPERVISING ARCHITECT, TREASURY DEPARTMENT, WASHINGTON, D. C., July 22d, 1885.

Sealed proposals will be received at this office **until 2 P. M., on the 10th day of August, 1885,** for furnishing all the safe and vault work required for the public buildings under control of the Treasury Department during the fiscal year ending June 30, 1886, in accordance with drawings and specification, copies of which and any additional information may be obtained at this office.

Bids must be accompanied by a certified check for $500.

M. E. BELL,
Supervising Architect.
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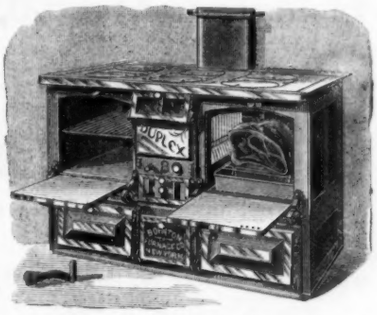

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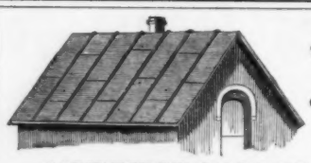

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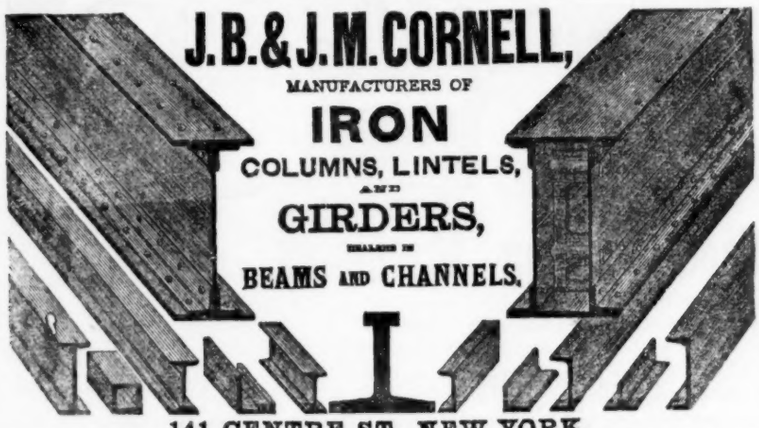

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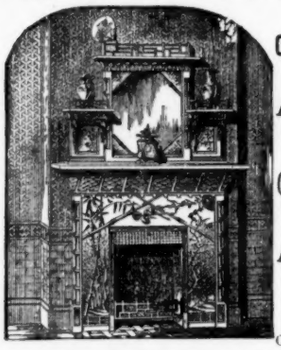

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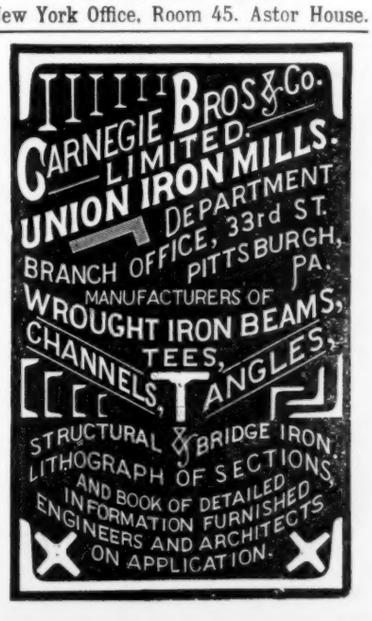

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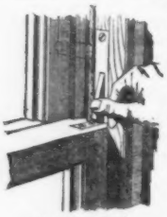
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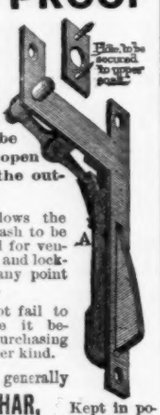

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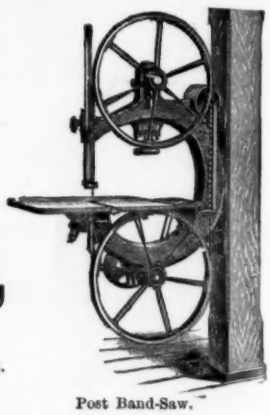
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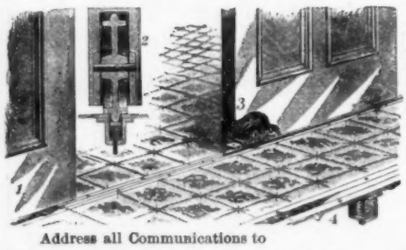

Figure 1 shows door open with centre rail level with floor. Figure 2, section of sheave, showing its position on rail. Figure 3 shows door closed with sheaves placed and centre rail depressed. Figure 4 shows track running off in the recess.
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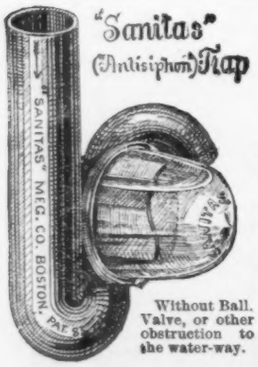

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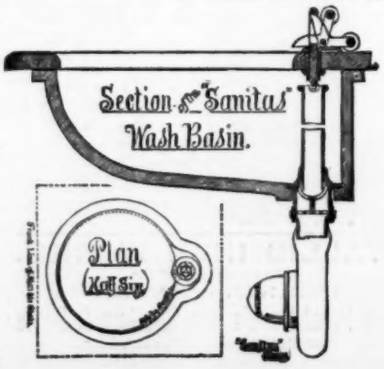

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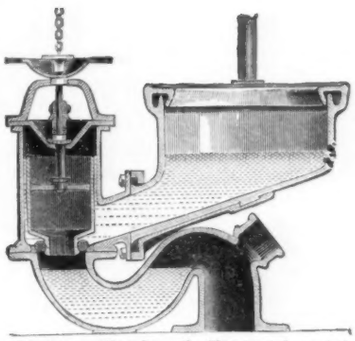

The above section shows the Closet cut through the centre. All the iron-work above the trap (the trap we enamel to order) is enamelled, the Plunger and cover for Plunger section, also the Bridge and lever being galvanized and put together with brass bolts.

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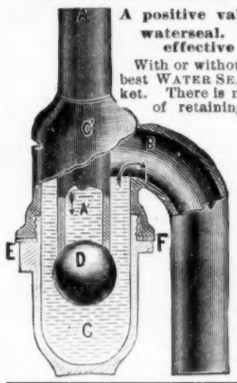

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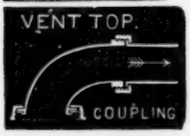

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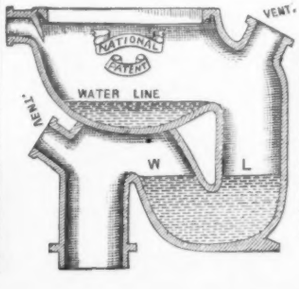

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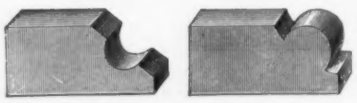

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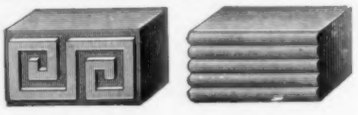

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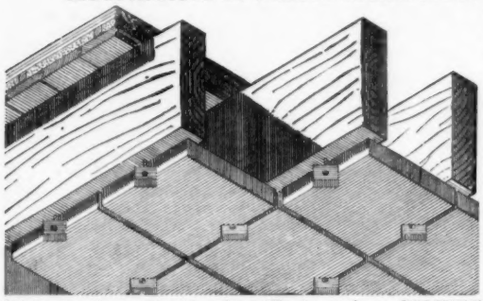

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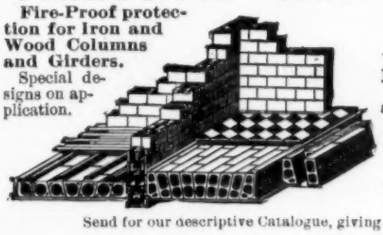

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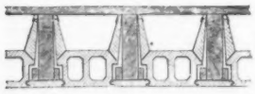

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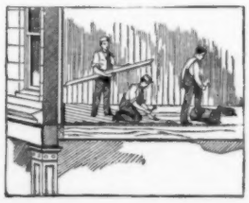

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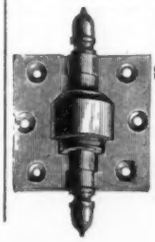

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7-8 inch tongued and grooved, European Styles, Solid and Substantial Also 3-8 inch Fancy Wood Carpet Floors.

293 FIFTH AVENUE, NEW YORK. Wholesale and Retail.

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The National Wood Manufacturing Co., Of 16 East 18th St., New York.

REMOVED to 129 5th AVE.

INLAID WOOD FLOORS, 5-16 and 7-8 inch thick.

Designs and estimates on application. Established 1867.

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FOR ALL PURPOSES.

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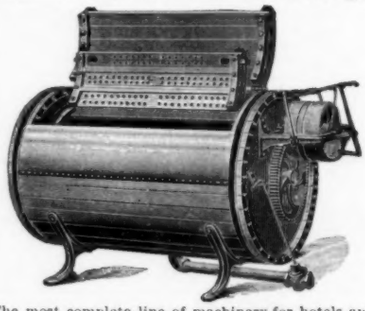

The most complete line of machinery for hotels and Public Institutions. Complete laundries for Institutions our specialty.

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FRINK'S Patent Reflectors for Gas or Oil, give the most **powerful, softest cheapest & Best** light known for Churches, Stores, Show Windows, Banks, Theatres, Depots, etc. New and elegant designs. Send size of room. Get circular and estimate. A Liberal discount to churches and the trade. *Don't be deceived by cheap imitations.*

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Bailey's Compound Silver-Plated CORRUGATED GLASS REFLECTORS ! !

A wonderful invention for lighting Churches, Opera Houses, Halls, Storerooms, etc. Latest and handsomest designs. **Satisfaction guaranteed.** Plainer styles for manufactories. Send for Illustrated Catalogue and Price-List. **For Gas or Oil.**

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Scenery for Theatres, Public Halls and Amateurs

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AMERICAN AND GEM SPRING HINGES.

Bronze, Brass & Iron, In Various Styles, and SUPERIOR Finish.

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"Giant Metal Sash Chain."

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THE SMITH & EGGE MANUFACTURING CO.,

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The most reliable and economical article in the market for the purpose. GREAT TENSILE STRENGTH Does not corrode; does not lose its vitality by continuous use, or exposure to the elements; runs over any pulley, and gives satisfaction wherever it is used. Fixtures made of steel wire, is very simple and easily applied. Prices very low. Samples sent to any architect in the United States, free, on application. Now in use in State House, Hartford; Providence City Hall; Singer Building, Chicago; J. C. Flood's, Menlo Park, Cal. Vanderbilt and Florence Flats, New York; Boreel Building, New York; new State War and Navy Departments, and Patent Office, Washington, D. C.; *Herald* Building, Boston, and very many other fine buildings in all parts of the United States.

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Sole Agents for **Styrian Tool Steel,** for the United States and Canada.

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The American Architect and Building News

ADVERTISERS' TRADE SUPPLEMENT.

No. 38. SATURDAY, AUGUST 1, 1885. Volume XVIII. No. 501.

ROBERT COLGATE.

Robert Colgate, who died on Saturday, July 4, at his Summer home at Riverdale-on-the-Hudson, was one of the oldest merchants of New York, having been successfully engaged in business on his own account for over half a century. Born in 1812, only a stone's throw from the spot where his office has been situated for the last forty years, he was the eldest son of William Colgate, founder of the well-known soap business. His grandfather, also named Robert Colgate, was an English farmer of some prominence in Kent County, who, during the critical period of English history following the French Revolution, expressed such liberal views that he was marked for imprisonment in the Tower of London, and it was only through the intercession of William Pitt the younger, who had been his friend from boyhood, that he was allowed the alternative of emigration to America.

The great work of Mr. Colgate's life was the foundation and development of the Atlantic White Lead and Linseed Oil Works, which from a small beginning in 1845, has grown to its present large dimensions. It was his constant study to bring every department of this manufacture to the highest possible perfection, and he always preserved a happy medium between enterprise and caution. He was accustomed to say that the two chief rules of business success were to be careful to get good men around one's self and to persevere faithfully in one direction. Mr. Colgate was an indefatigable worker, and maintained an interest in his work that ended only with his life, in spite of great physical infirmity. Before reaching middle life he was crippled by a species of paralysis, which, although gradual, was progressive, depriving him almost entirely of the power of walking, and which was accompanied at times by intense suffering. It was a life-long struggle with a disease bound to conquer in the end, but kept in check by a strong will-power and a cheerful disposition.

Notwithstanding this affliction and the constant cares of business Mr. Colgate devoted much attention to public affairs. He was largely interested in public and private charities, in church work, and in various societies.

He leaves four sons, who were all connected with him in business, and two daughters. — *New York Times.*

ABRAM COX.

Mr. Abram Cox, for several years president of the Abram Cox Stove Company, of Philadelpha, died on Tuesday morning, June 23, aged 68 years, and was buried on Friday afternoon. Mr. Cox had been troubled with paralysis, which had made him an invalid for nearly 20 years, but it was only within the past year or two that he had been compelled to give up all attention to business. The greater portion of his active life was spent in building up the business of his house, which was established by him and Joseph Cox in 1847, at No. 106 North Second Street, where they dealt in stoves to a limited degree. In 1851 they began the manufacture of stoves and hollow-ware, under the name of the Penn Stove Works, and opened a foundry at Sixth Street and Germantown Road, where they remained until 1861, when they moved to their present location. In 1857 Mr. John Whiteman entered the firm, and from that time it went under the name of Cox, Whiteman & Cox until 1881, when Messrs Whiteman and Joseph Cox died. The firm was then incorporated under the title of the Abram Cox Stove Company, with Abram Cox as president. The company then purchased its present spacious quarters, which enables it to carry a varied and extensive stock. — *Metal Worker.*

CLEANSING A MARBLE BUILDING.

Since the Mutual Life Insurance Company has removed its business from its old building on Broadway and Liberty Street, to its new one on Nassau and Liberty Sts., great alterations and improvements have been made in the former building, both internally and externally to fit it for general offices, etc.

But that which has most attracted the attention of the many thousands who pass daily along Broadway, has been the cleaning and renovating of the old marble fronts, which, from looking like dark granite — in fact, it was so covered up with dirt, etc., that one could not tell what it was — has, during the past month or so been restored to a pure white marble, showing its natural veins in so distinct a manner that it has gained universal comment and approval.

From twenty to thirty men were employed upon swinging stages, to which were attached large placards stating that the work was being done by the Brick and Stone Waterproofing Company, of 55 Broadway, New York. Inquiry would discover that the said Company owns and uses an improved process, called the "Caffall Process," for the cleaning and preserving of stone, and certainly, as far as can be judged at present, it is fully entitled to the claim of "improved," for no marble building that we know of has hitherto been so thoroughly restored to its natural appearance as has this one.

The work has been conscientiously carried out from eaves to basement, and the sharp arrisses of the carvings look as though fresh from the chisel of the mason.

This process, unlike most others employed to clean marble, does not injure the stone, but, on the contrary, the chemicals used have a preservative effect, so that the marble presents a hard, clean and smooth surface, that does not rub off or whiten the hand when passed over it, nor so readily stain or discolor as when the stone is left rough and broken up by the usual method.

This claim is confirmed by scientists specially engaged to examine into the merits of this process, amongst them being Professor R. Ogden Doremus, of the College of the City of New York, who says, under date of March 24, 1883: —

"Mr. Caffall also successfully demonstrated his new and improved process for restoring the original whiteness of marble and other limestones, whereby the rubbing away of the surface, the common method, or the destructive effects of the acid process of cleaning, are avoided. It is based on scientific principles; it is capable of speedy application, and perfectly effective in its action. Moreover, it does not injure the face of the stone, but leaves it in a clean, sound and solid condition."

Also from Professor Regis Chauvenet, late State Analyst for the State of Missouri, who says: —

"I have examined the process of cleaning and waterproofing, as detailed and illustrated by the inventor, Mr. R. M. Caffall. The process consists first in applying a cleansing mixture to the surface; next, the treatment with a solution which keeps the lime of the stone in an insoluble condition; and finally, in the application of a preservative, which is calculated to give a surface to which dirt and smoke will not adhere as they will to the original stone."

The above statements by such well-known authorities, together with the evidence of one's own eyes when looking at the Mutual Building, unquestionably shows that this cleaning process is at the head of its competitors, and should recommend it to the especial notice of those who desire to have their buildings properly cleaned and renovated.

THE BRICK AND STONE WATERPROOFING COMPANY,
55 Broadway, New York, N. Y.

BUNDY'S STEAM RADIATORS.

In calling the attention of the trade, architects, consumers, etc., to the "Bundy radiator," we wish to say that the increasing number annually sold, and the style of buildings in which they are placed, are sufficient evidences of their superiority over other radiators in the market. We have over 500,000 in use. This radiator is equally adapted to high or low pressure, each one being tested to a pressure of 125 lbs., and, if required, to 200 lbs. to the square inch.

The most improved machinery and experienced labor is employed in constructing it. It is used in the public schools of New York, Goverment buildings, churches, hotels, "French flats," banks, stores, offices, steamboats, private residences and factories throughout the country. Our increased facilities enable us to fill orders promptly, and offer these radiators at prices lower than any others in the market.

A FEW OF THE ADVANTAGES OF THIS RADIATOR.

1. Each loop is screwed by 2¼ inch hole into the base, giving free passage for steam and return of condensation, and the joint is not affected by expansion or contraction. 2. The loops being vertical, no accumulation of water can occur, insuring a positive, free circulation of steam. They are not liable to injury from rust or freezing. 3. It can be made to fit almost any place, and occupies from 15 to 25 per cent less floor-space than any other radiator of equal heating surface. 4. There is no corrugated or uneven surface to retain dust in the Bundy radiator, and therefore it is very easily kept clean. 5. Each loop contains fully three square feet of heating-surface, with its proportion of base. 6. It has no packing of any description, and unlike others, will not leak from unequal expansion and contraction of joints. 7. It excels all radiators in simplicity of construction and economy in repairing. To change the height of a radiator or replace a loop occasions only a trifling expense or delay; and it can be shipped "knocked down."

A. A. GRIFFING IRON COMPANY,
550 Communipaw Avenue, Jersey City.

We regret to learn that the Garry Iron Roofing Company, of Cleveland, Ohio, were burned-out July 8, causing a loss of $45,000 on which there was $12,000 insurance. The Iron Ore Paint Company and several others also suffered.

TRADE CATALOGUES.

It would be interesting to know how much money is expended yearly in trade catalogues, and how much of it is productive of benefit to those who issue them. There must be a profit in most cases, else so vast an amount would not be lavished on their production. We are not among those who try to persuade manufacturers that money spent in catalogues or circulars would be more wisely used in advertising in general circulating mediums; as architects, we know well the value of the catalogue when we want to refer to it, but until that time arrives, we have seldom the leisure to examine it, and we are rarely so pressed for time that we cannot write to the dealer whose advertisement has been staring us in the face, week in week out, for the last five years; and we are glad to know that in most cases our request will be as promptly followed by the appearance of the desired catalogue as if we had never thrown twenty duplicates of it into the waste-paper basket in times past. But as in all things there is a proper and improper way of issuing trade catalogues.

The success of a catalogue depends on much beside the cost of it. In the first place it must be, in these days, artistic and consistently so. For instance, the four little hand-books of J. & R. Lamb, of 59 Carmine St., New York, have a sufficiently attractive appearance, and one expects to find in them satisfactory representations of this firm's excellent work, and it is a disappointment to find the old-fashioned cuts of their earlier catalogues used in these, and printed on paper which has no relationship with that used for the cover.

Next it should have the air of having been prepared with the intention of filling a permanent place on some shelf, or in some regular place of file, and not in the omnivorous waste-paper basket. The catalogue of the H. B. Smith Co., manufacturers of steam-heating apparatus, Westfield, Mass., is a good example of a serviceable catalogue which stands an excellent chance of preservation. As it must expect a certain careless handling its rounded corners are an added guaranty of life, as nothing sends a pamphlet to the waste-basket sooner than dog's-eared leaves.

Another thing desirable in a catalogue, particularly if it mentions prices, is that it should bear the date of issue, and we find that the catalogue of the Raritan Hollow and Porous Brick Co., of 115 Broadway, and of Henry Maurer, 420 East Twenty-third St., New York, are among the few in which this somewhat important fact finds expression. The former is moreover, a very praise-worthy example of book-making.

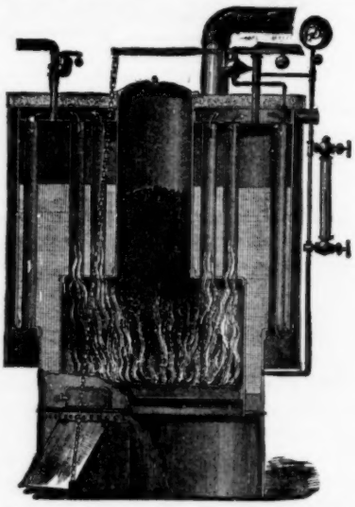
But perhaps the most desirable characteristic of a trade-catalogue is that it should be well arranged and lucid in its explanations, without too much of self-laudation on the manufacturer's part, which more often repels than attracts. Fortunately a very fair percentage of catalogues issued now-days possess this characteristic, and amongst others may be named that of the Florida Boiler Works of Geneva, N. Y.

The Cincinnati Corrugating Co., of Cincinnati, O., issues a catalogue which contains material of some general and much special value, which it might be well to have put in more enduring shape. But here probably arose the question whether to spend money in making the catalogue enduring, or to spend it in advertising, which should stimulate those inquiries which would make the existence of a catalogue desirable and necessary.

ESTERBROOK'S STEEL PENS

FOR SALE BY ALL STATIONERS.
THE ESTERBROOK STEEL PEN CO.
20 John Street, New York, N. Y.

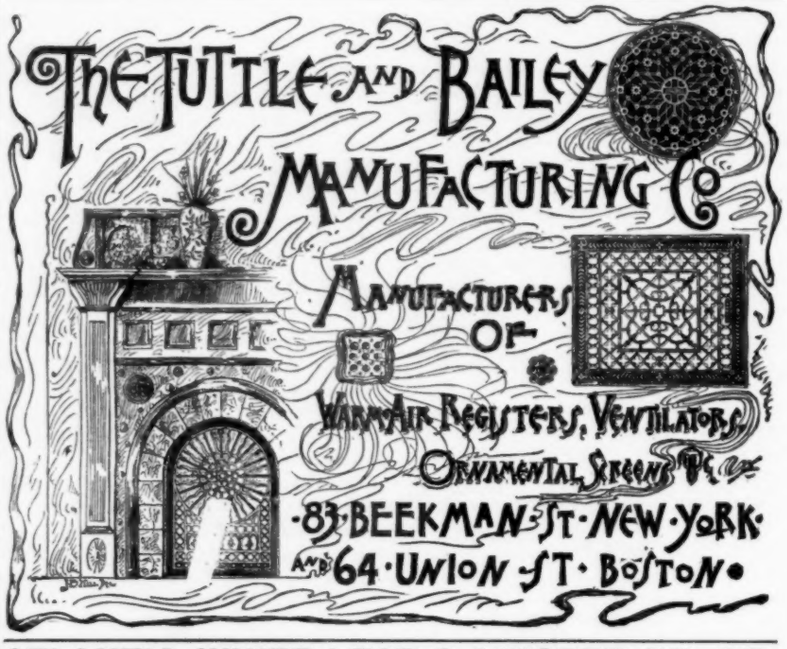
CORTON'S
House-Heating
Steam Generator.



Self-Feeding, Base-Burning, Wrought-Iron.

First-class in its construction, perfectly safe in use—generates steam quickly and rapidly; is compact, taking small floor-space, requiring no brickwork in setting; economical in the use of fuel, and costing much less than any other wrought-iron boiler of like capacity now in use. Write to us for catalogue and price-list.

CORTON BOILER M'F'G CO.,
110 Centre Street, New York.



ATLANTIC WHITE-LEAD & LINSEED-OIL CO.,

"ATLANTIC"
PURE
WHITE LEAD,
—AND—
Pure Linseed-Oil,
Raw, Refined and Boiled.

Manufacturers of

The best and most reliable White-Lead made,
And unequaled for
Uniform
Whiteness,
Fineness,
and Body.

Robert Colgate & Co.,
287 Pearl St., New York.

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PORTLAND CEMENT

Is superior to any other Portland Cement made. It is very finely ground, always uniform and reliable, and of such extraordinary strength, that it will permit the addition of 25 per cent more sand, etc., than other well-known Portland Cements, and produce the most durable work. It is unalterable in volume and not liable to crack. 6,000 barrels have been used in the foundations of the Bartholdi Statue of Liberty, and it has also been used in the construction of the Washington Monument at Washington. Circular with Testimonials and Tests sent on application.

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Having Purchased the

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ARE now prepared to furnish the public with a perfect working window. Architects, Builders, and owners about to build are invited to examine the full sized window on exhibition at Mechanical Exhibit Room, on the corner of Wabash Avenue and Washington Street. This improvement should revolutionize the manufacture of Window Frames. It is applicable and desirable for all grades of buildings. For hotels and very high office-buildings, avoids the frightful accidents that so frequently occur to persons going outside on high buildings to wash windows. It saves the trouble and expense of sending for a carpenter to take out and unhang the sash, to repair a broken glass, cord or a tangled weight. The expense of one such operation would more than pay the extra cost of the Company's appliances. The window can be made tighter than by the old method. A servant can open, wash, and readjust windows of ordinary size.

157 and 159 La Salle St.,

Room 107, Chicago.

H. A. STREETER'S

Patent Solid Muntin

Metallic Window-Sash

For Fire-proof Buildings, Insane Asylums, Prisons, etc., etc.

Light, strong and durable. Fire and burglar proof. Best, cheapest and neatest form of fire-proof sash now in use. Used in the State Insane Asylum, Kankakee, Ill., Major Willett, Architect, Chicago; Insane Asylum, St. Joseph, Mo., Col. S. V. Shipman, Architect, Chicago; Cook Co. Insane Asylum, Jefferson, Ill., Egan & Hill, Architects, Chicago.

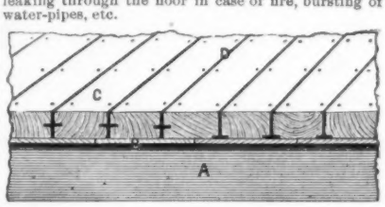
Manufactured by GLOBE IRON WORKS,

H A. STREETER, Proprietor,

35 to 41 Indiana Street, Chicago, Ill.

DOLBEARE'S
Water-Tight Wood Floors.

Architects and Builders will find in Dolbeare's Water-Tight Wood Floors an improvement long sought for, combining lightness, durability, and absoluts water-tight qualities. For horse-car, livery, and private stables, it is rapidly taking the place of caulking or concreting. For slaughter-houses, currier's shops, factory floors, bridges, etc., it is highly recommended. In first-class stores, hotels, and public buildings, by the use of this floor it is absolutely impossible for goods or ceilings to be damaged by water leaking through the floor in case of fire, bursting of water-pipes, etc.



Patented June, 1882.

In the above cut an end or sectional view is shown, B representing a 7-8 matched boarding on Floor Timber, A, C showing a 3-inch planking with 3-8 Rabbetting or Groving (this can be laid in thickness from 1 inch, upwards), and D showing the Filling in the seams, applied hot, which, when set, is thoroughly adhesive to the wood and sufficiently elastic to allow for any ordinary shrinking, swelling or settling.

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BOSTON, June 14, 1882.

W. L. DOLBEARE, Esq.

Dear Sir:—It affords us pleasure to recommend your process for "Making Floors Absolutely Water-Tight." In our new Bunker-Hill Stable, where we have stalls on three floors (one directly over the other), it has given the most perfect satisfaction, and makes no extra strain upon the walls of the building, as would be the case if the old method of "Caulking" was resorted to. In very many respects I regard your floor as very much superior to any caulked floor. Very truly, CHARLES E. POWERS, Pres.

SAMUEL D. KELLEY, ARCHITECT.

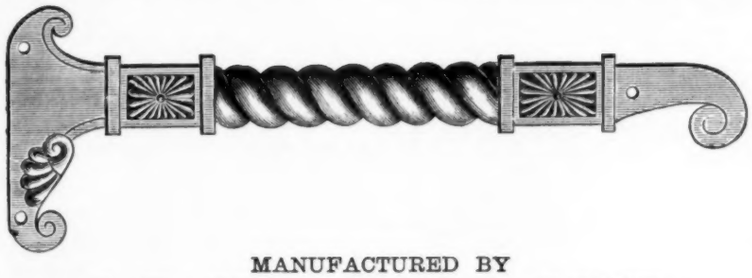
BOSTON, June 21, 1882.

W. L. DOLBEARE, Esq.

Dear Sir:—I have used Dolbeare's Improved Water-Tight Wood Floors for stable purposes to the extent of about fourteen thousand (14,000) square feet, and they have given complete satisfaction. I consider it superior to caulking or other Improved Water-Tight Floors. Yours, &c.,

SAMUEL D. KELLEY.

ANTIQUE
HINGE PLATES.



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Acknowledged by all who have used them to be superior to all others.

NO LOST MOTION. NO HUB TO BREAK.
NO KNOB-SCREWS OR WASHERS. MOST QUICKLY APPLIED.

☞ **ADAPTED FOR ALL DOORS FROM 1 1-4 INCH AND OVER.** ☜

For Prices and Particulars address,

BUTLER & CONSTANT.

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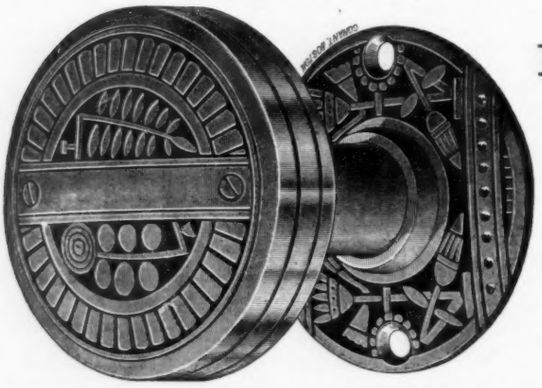
AGENTS FOR CANNON'S PATENT DUMB WAITERS.

NASHUA LOCK CO.,

NASHUA, N. H.



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FINE CASTINGS

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Bronze, Brass, & Iron.

Full Line of Samples and Goods may be found at

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MURPHY & COMPANY

TRANSPARENT WOOD FINISH.

Call the attention of Architects and Builders to the following grades of Varnish.

INTERIOR, $2.50 per gallon.

For interiors, on painted surfaces or plain wood. Peculiarly adapted for Hallways, Bath-rooms, Kitchens, etc., and for Floors, Walls, Ceilings in Asylums, Hospitals and Public Buildings. Its lustre is unaffected by hot or cold water, or extremes of temperature, or by the action of soap, grease, or gases.

EXTERIOR, $4.00 per gallon.

Possessing all the qualities of the "Interior," as above, but having greater durability. Intended for outer Doors and Sashes, Vestibules, and surfaces where the exposure to the elements is constant or severe. It is an absolute preventive of dry-rot and moisture.

In addition to the above-mentioned products, and to their popular and unequalled fine carriage and railway varnishes, **MURPHY & CO.** ask attention to their superior **Fine House Varnishes**, especially adapted to interior and exterior work on public buildings, churches, office-buildings, business blocks, office, and private residences. Further information and samples for trial furnished to parties interested. These grades are manufactured solely by

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Acme Window-Blind.

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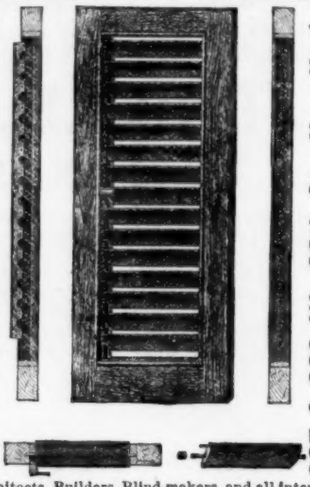
Patentees and Sole Manufacturers, 227 & 229 W. 29th St., New York.



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Something New for the Stable.

Read's Patent Harness Bracket.

An Article long wanted but never before made.

Holds the whole harness, takes no more room than the ordinary hook or peg, can be used for both single and double harness. Gives the harness-case a neat appearance, as it carries the harness up uniformly in width with the saddle, beside keeping the bridle and breastplate in their proper shape. They are neatly japanned, with gilt facings. Price **$18** per dozen. Are now in use in over 100 first-class private stables in and about Boston.

Each bracket lettered **"J. J. Read, Boston, Mass."** For sale by dealers everywhere.

Indorsed and approved by the following named gentlemen, all of whom have them in use:

Boston; R. H. White, J. M. Sears, J. T. Morse, Jr., Thos. Motley. Cambridge: F. A. Kennedy. Portsmouth, N. H.: Hon. Frank Jones. Milton: H. P. Kidder, Col. H. S. Russell, J. M. Forbes. Dedham: A. W. Nickerson. Newton: J. C. Potter. Salem: Dr. W. Saunders. Waltham: J. H. Ellison. Readville: C. G. White. Beverly: Dr. Chas. Haddock. Swampscott; C. P. Curtis.

The public are cautioned against all similar brackets, not marked with my stamp, as such brackets are infringements of patents held by me.

Also cedar-top riding-saddle bracket. Price $3.50 each. An whip-rack for English coach and straight whip combined. Price 50 cents each.

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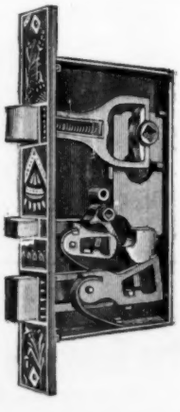
NON-PICKABLE DOOR LOCKS

Cost no more than ordinary locks. Turning the thumb-knob closes key-hole and fastens both knob and latch, and no key can be inserted from *outside*.

We also make

Two Bolt Locks and Latches, on same principle, with full Trimmings,

Send for Illustrated Catalogue. Sample locks sent to architects on request.



PERKINS SPECIALTY LOCK CO.,
CLEVELAND, OHIO.